Vol. 4, No. 6

MicroWINGS Magazine

OFFICIAL MAGAZINE OF THE INTERNATIONAL ASSOCIATION FOR AEROSPACE SIMULATIONS

Apollo's Scenery & Object Designer
Building Your Own Cockpit
Preview of 747-PS1
The Saga of Speedbird 9
Ground Reference Maneuvers
Round Robin Flying in Florida

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Editor in Chief: Robert M. MacKay

Executive Editor: Debra E. MacKay

Contributing Authors: Jim Ross, Charles Gulick, Rick Lee, Scott Holtzman, Nels Anderson, Alfred Poor, Bill Higgins, Tim Trimble, Michael Fisher, Dan Maas, Phil Curtiss, James Yates, E.J. Peiker, Steve Wigginton, Tom Kopke, John Kelley, Laurent Mangane, Jonathan Stern, Hans Kiener, Dave Baucum, David Allan, David Atkinson, Bill Cline, Enrico Schiratti, Greg Hannigan, Russell Mueller, Robert Pursur, John McNeely, Mark Stotzer, Al Pelletier, Eric Mitchell, Hal Groce, Lee James, Mel Ott.

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CONTACTING MICROWINGS

To contact the MicroWINGS Offices or address any of the authors of articles appearing in MicroWINGS Magazine, address all correspondence to: MicroWINGS Magazine - 381 Casa Linda Plaza #154, Dallas, Texas 75218 USA. For telephone calls or faxes, dial 214-324-1406.

from the editor

DISK Space... While many people have come to expect 1997 to be the year of new simulators (and with Microsoft's FS95, Lago's AS, Sierra's ProPilot, Looking Glass' Flight II, etc. - who would doubt them?), it could just as well be the year to purchase additional hard drives. It seems that along with the extensive disk space requirements of all these new sims, all the add-ons are going to also require real estate on your storage media. Microsoft's recent Southern California Expansion Pack requires 160 mb of hard drive space to run smoothly (it can be left on the CD, but the pauses due to CD-ROM accessing can be annoying) and Lago's forthcoming scenery masterpiece 'Scenario Venezia' will require 80+ mb of hard drive space (with no option to run from the CD). Don't handicap yourself... with 2+ GB drives (that's Giga-Byte) now selling for under $300 in some places, go out and purchase another hard drive solely for your flight simulation software and add-ons.

You can now add to your hard drive space requirements by creating scenery with Apollo's excellent Scenery & Object Designer. We have a review of it in this issue including some tips on getting started with it. Who knows? Perhaps your work of art will be featured in the Pilot Shop!

We have new screen shots for two of the new sims mentioned above, Looking Glass' Flight II and Sierra's ProPilot. The cover shows an external view of Flight II's Cessna being escorted by F-16's from a nearby Air Force base in San Francisco. More screen shots of Flight II and ProPilot can be found on the Sneak Peeks pages.

From time to time, we do reviews of high-end IFR simulators. So far, only one has come close to simulating the Heavies (airliners) - Elite's MD-80. Well... a new sim has appeared on the radar with perhaps the most extensive simulation of the cockpit ever attempted on a PC. 747-PS1 is previewed in this issue and requires the sim pilot to watch just about everything, not just fly the aircraft, but details such as door seals, hydraulic pressures, seat belt / no-smoking signs, etc. Our 747-400 NWA Captain who did the review, was most impressed!

I would like to welcome our latest commercial member, **Abacus**. Abacus is a relatively new player in the flight sim market, with a product called Pilot's Tools currently available and a windows based, easy to use Airport & Scenery Designer in beta testing (see this issue's NOTAMs). Please show your support for our commercial members and welcome Abacus aboard. *[MW✈]*

KIDS TO ADULTS
K-A
CONTENT RATED BY ESRB

© 1996 Microsoft Corporation. All rights reserved. Microsoft and Windows are registered trademarks and *Where do you want to go today?* is a trademark of Microsoft Corporation. BF Goodrich is a registered trademark of the B.F. Goodrich Company.

Is it a game when your stomach lurches in the course of performing a Cuban eight? Is it a game when beads of sweat appear on your forehead while flying under London's Tower Bridge to digitally sampled sound? No. This is not a game. This is Microsoft® Flight Simulator for Windows® 95, the latest upgrade to the most realistic PC flight simulation available anywhere.

Experienced sim pilots will relish logging time in their new Boeing 737-400 and aerobatic Extra 300S, extending the range of experience beyond the four planes already in the fleet. A heightened level of realistic flight dynamics has been achieved, as verified by Flight Safety International, the world's leading pilot training organization.

Buzz Las Vegas by night and Martha's Vineyard at dawn with a degree of photo-realism that only satellite imaging makes possible. Soar over New York, Paris, Tokyo and other cities with more detailed 3D rendering. Improved performance delivers smoother out-the-window views and more immediate response to cockpit controls.

Challenges have been added to test your skills under daunting weather conditions, over new terrain, in varied aircraft. Fly in the face of Mother Nature as you shoot an instrument approach into the fog. Climb over the Alps through rapidly shifting winds, turbulence and changing visibility. Blow the skirts up on the Statue of Liberty.

To find out even more about Microsoft Flight Simulator for Windows 95, visit our Web site at www.microsoft.com/games/fltsim/

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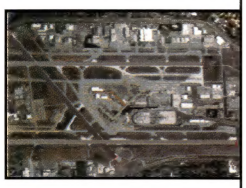
Where do you want to go today?™

Expansion Pack with southern California scenery, challenges and adventures available soon.

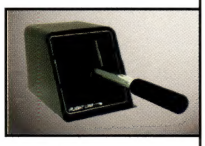
NOTAM'S

News Bits From Around The World

Note - If a company listed below is a commercial member of MicroWINGS, it is a very good indication that you can count on their support of flight simulation users like yourself and for the market. Contact information for commercial members is located in every issue in the Commercial Member Directory.

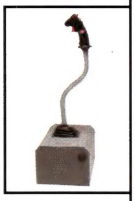


MicroWINGS finishes v2.0 of the hit Dallas/Fort Worth scenery - The new version sports complete compatibility with FS5.1 and FS95, revised ATIS freq's to latest Jepp charts, revised ILS freq's to latest Jepp charts, all ILS approaches to the six major airports, added the new runway at DFW, renumbered affected runways and added new taxiways to the new runway at DFW, corrected the tower location at ADS, changed Pecan Plantation's runway from dirt to asphalt, fixed a problem that prevented White Rock lake from showing at Very Dense setting, added the six new VOR's that came active with the new DFW runway (JEN, MQP, UKW, FUZ, CQY, and BYP), created a new exclude file that works for 5.1 and 95... and also removes the old four corner VOR's (BUJ, SCY, AQN, BPR) that are still in 5.1 and 95's default scenery, removed original Static aircraft at airports that caused lockups due to an FS95 bug, added all kinds of new aircraft objects (non-dynamic based to prevent lockups) at all six major airports (G/A planes, Business jets, 737's, MD-80's, Airbuses, and 747's!), created a new install program for FS95 users, printed a new fold out - full color map of the latest VFR Terminal chart and a quick reference of airport ID's and freq's in the scenery and has most of the IAP's printed on the back. The scenery will now come on CDROM. Current members can order the new DFW CD for $8.00 (USA mbrs) and $11.00 (Int'l mbrs). You can place your orders now via telephone, mail, fax, or the MW Store section on our website (www.microwings.com).



Flight Link satisfies the need for rotor (helicopter) sim controls - Flight Link's latest hardware innovation is a set of flight controls specifically designed for users to more realistically control rotor sims. The hardware works great with perhaps the best rotor sim on the market, X-Plane by Laminar Research. The latest version of X-Plane supports helicopter simulation.

Aerosoft launches several new titles / CHS to distribute - Aerosoft has recently released several new titles for the Flight Sim 5.1/95 and ATP enthusiast including Airline Flights (complete ATC based airline adventures), FCS (a flight control system), Greatest Aircraft Collection, ATP-Germany (scenery for ATP), and Scenery Designer (a Windows based scenery designer for FS5.1 and FS95). CHS distributing will be carrying these titles in North America. Look for reviews of these products in upcoming issues.



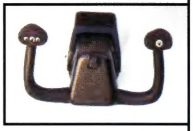
Precision Flight Controls ships full size (from floor to grip) stick control system w/ rudder pedals - Stick'n Rudder will sell for $495, but MicroWINGS members get a 15% discount! We've seen the unit in our offices, and it is excellent both in use and in quality. With this new product, the use of a stick to control a simulator is no longer relegated to just combat sims.

Abacus to publish new scenery designer - Abacus will be repackaging and polishing to professional standards, the best 3rd party scenery designer that can be found on the Internet and online services. Previously known as SCBuild 2.0, Airport & Scenery Designer (ASD) will feature the ability to instantly create VOR's and NDB's, allow you to create complete airports (runways, lighting, ILS's, markers, taxiways, buildings, etc.), place synthetic scenery area tiles, adjust scenery textures for seasons, make use of pre-defined scenery objects (ships, storage tanks, water towers, etc.), and best off all... has built-in extensive maps of the USA including accurate coastlines, roads, highways, rivers, lakes, cities, etc. The windows based package allows you to simply point where on a map to of the entire USA to place scenery. Expected release is 2nd quarter of this year.

LAGO releases patch for Airline Simulator (AS) - The patch to make AS into v1.15 is available on most websites and online services. If you have an early version of AS, then this is a must have patch to get.

MicroWINGS is now offering T-Shirts and Sweat Shirts - In case you did not make it to the last conference we hosted, or if you want to order more, MW is now selling T-Shirts and Sweat Shirts. Spruce up your wardrobe and strut your flight simulation enthusiasm. Both Members and Non-Members can order these shirts (although members, of course, get a discount). T-Shirts are made of high quality (Hanes Beefy-T brand or similar), 99% pre-shrunk cotton, 1% other fibers. Image is done in 3 colors (see image) Blue, Black, and Red. The T-Shirts come only in XL (USA sizing) and can be ordered in White or Gray Speckle. Sweat Shirts are made of high quality (Jerzees Super Sweats brand or similar), 80% cotton, 20% polyester. The sweat shirts only come in XL (USA sizing) and only in White. Member prices are $12.95 for the T-Shirts and $21.95 for the Sweat Shirts. The prices do not include shipping (several options are available). Call our offices or visit our website's MW Store section for shipping methods and prices.

AETI ships new yoke and twin-engine throttle quadrant - After receiving tremendous accolades at the MicroWINGS conference, AETI has started shipping their high quality yoke and separate twin, jet-style quadrant. The yoke features highly realistic, stiff-yet-smooth operation much like a real airliner's yoke. The yoke also features an audible, electric trim switch. For more pictures and information, see the AETI website from the MW Cool Webs page.



Apollo set to ship updated Flight Shop - A new version of Flight Shop will be shipping shortly, featuring better integra-

tion with FS95 and a new flight dynamics editor so that aircraft flight characteristics can be adjusted without having to use FS5.1.

Sierra adds more detail and realism, as well as a July release date, for ProPilot - The much talked about simulation from Sierra, ProPilot, is developing more and more into a complete, well-rounded product. The latest screen shots shown in this issue's Sneak Peeks, demonstrates panels with a near complete set of graphics and instrumentation - as well as a different panel for all the aircraft expected to ship with the product. The scenery shots shown in Sneak Peeks indicate that the ProPilot world is becoming filled in with aerial photographic quality renditions. Expectations for this product are running high.

MW website passes 1/2 million hits! - The center for Internet based flight simulation, the MicroWINGS website, has reached and passed 500,000 hits. The site features the latest flight simulation news, articles, reviews, how-to's, the most extensive & organized set of links to other flight sim related pages, download sections (with above average files so the user can count on the download being worthwhile), an extensive message board where you can find, request, and offer help to others in the flight sim world, a Store section where you can order renewals, DFW scenery, T-shirts, Sweat Shirts, etc. Stop by and see why this is the starting off point for many when surfing the Internet.

Looking Glass sets sights on Summer release for Flight II - Flight II will be a VFR, general aviation flight simulation based on the flight model pioneered by their prior hit, Flight Unlimited. The sim will initially be based over aerial photographic renditions of the entire San Francisco area. Detail will reportedly be so good, that you can actually fly purely by VFR procedures - i.e. being able to physically see and recognize roads, landmarks, etc. The sim is expected to ship later this summer. See the Sneak Peeks section and the cover photo in this issue for more on Flight II.

Laminar Research reduces price on run away best-seller X-Plane - A spectacular price drop to just $249.00 now brings one of the hottest high-end sims, to the price range of the masses. See the review of X-Plane in our next issue! *[MW✈]*

MicroWINGS Magazine

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MicroWINGS Drawing Winners!

The Nov/Dec Drawing Winners Are:

JJ van Rensburg of South Africa has Colorado Technologies' *Navigator* on its way to him. Congratulations!

Norman Pisner of Bethesda, MD has BAO's *Flight Sim Flight Shop CD* on its way to him. Congratulations!

CROSS WINDS

with Charles Gulick

Short and Sweet

I like to make short flights... and in slow airplanes. To tell the truth, long flights bore me. My idea of a good flight time is about 15-30 minutes. That way, with minimum tomfoolery I get to take off... climb to a cruise altitude of around 2,000 feet AGL (which keeps me free of altitude regulations)... enjoy a bit of local scenery, if any... let down...enter the pattern at my destination airport... and land. All of these stages of a flight are enjoyable for me, including the short cruise portion. But if the cruise is a long, dull, droning affair, I'm likely to fall asleep at the throttle (which, incidentally, happens more often than you'd like to know about in the cockpits of real-world commercial flights).

So while the long haul fans—like maybe you?—are cruising for a couple of hours at 30,000 feet over a relatively barren landscape, I can make a half-dozen or more flights, enjoying a host of different sceneries, approaches, and landings. There's just no comparison! *But then again, I'm prejudiced towards short flights.*

Through out my years of flying Flight Simulator, I've evolved a special way of saving and titling short flights, which I'm going to share with you in this edition of Crosswinds. At the same time I'll lay out a few of the flights themselves, hopefully to whet your appetite for shorties. The key thing is, you'll learn how to make your title very informative, and to set up your instrument panel to give you all kinds of information about the flight you're going to make—literally everything you need to know to take off, fly right, and get where you're going—no formal flight plan and no long-winded "description" required. In fact, in FS95 a title of 31 or fewer characters, plus a knowledgeable reading of your instrument panel, are all you need to make the type of flights I'll describe.

Just as an aside, when I wrote the words "no formal flight plan" above, I was reminded of something my great and (by me) revered instructor Arnold Kufta said to me just before we made one of our cross-country flights together. We were walking out to our rented Cessna 150 at what was then Totowa-Wayne airport in New Jersey, and Arnold suddenly said "Where's Danbury?" Without thinking, I pointed in a generally northeasterly direction, conveying where I envisioned Danbury, Connecticut to be in relation to where we were standing. "Okay," said Arnold, "let's fly there."

In his inimitable (and to me beautiful) way, Arnold was teaching me a basic lesson. To fly somewhere (in the general aviation world), it's perfectly possible to get into an airplane and just go—no flight computer, no flight plan, no intensive preparation. If you have charts of the area aboard, that's all you need...and if you know an area you don't even need charts. According to Arnold, "It's okay to sit down with a plotter and figure out all that stuff if you're not going to go." His point was clear. If you're a hired pilot, whether a charter pilot or a corporate jockey—anything other than an airline pilot—and a customer or the boss comes into your office needing to go to Danbury right away, you can't sit down at a comfy table in the pilot shop and figure out how to get there. No way. Instead, you go out to the plane immediately, help the passenger(s) get seated, get into the airplane and take off.

The planning, if and as needed, is done dynamically. After all, you're supposed to be a professional—right? Your sectional chart has everything you need to fly by visual reference from A to B—even if you've never been to B before.

Where's Moffett NAS?

If you've flown a bit in the San Francisco Bay area, you could probably take off from any of the airports near San Francisco and find Moffett NAS using neither navaid nor chart. You'd simply fly to the Bay and follow it south, knowing that at the foot of it is Moffett. (And on the way you'll pass Palo Alto on your right.) This is called flying by "pilotage." You use visual references to find your way. Chances are, even if the San Francisco area is not familiar to you, some area is—maybe the Chicago area. You can probably get to Meigs without a chart—just by flying east to Lake Michigan and then up or down the west shore of the lake to the airport. This kind of flying is good for you, because it builds both skill and confidence in the use of your eyes. If you haven't tried it lately, please do.

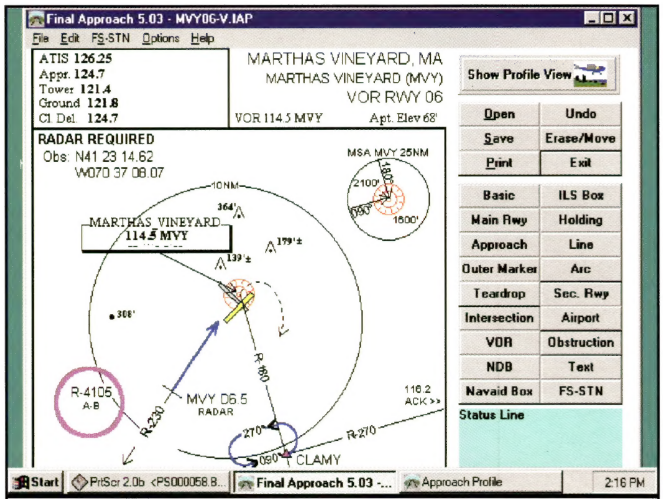


Figure CW.1 - Approach plate for MVY06. Note added "observer" parameters.

Meanwhile, our purpose here is not pilotage practice but the practice of setting up short flights that don't require specialized flight plans or flight computers or charts. All it takes is the technique I describe here. I call the results PFP's—or Panel Flight Plans, for reasons which will become clear.

Our first PFP will be for a flight in the New York Sectional area, from BID (Block Island State), RI to MVY (Martha's Vineyard) in Vineyard Haven, MA, where we'll make a VOR approach to Runway 06. Figure CW.1 shows the plan view of the relevant approach, as depicted using Georges Lorsche's excellent "Final Approach" utility (reproduction used with permission). Note that I have added to the plate, at the upper left under the words "Radar Required," the parameters for placing an observer alongside Runway 06, so whenever I fly to this runway at this airport all the necessary data is readily available on this approach plate. I find "Final Approach" very helpful in setting up ILS, VOR and NDB approaches to specific runways, no matter from which direction I'll be approaching those runways.

In FS95, enable World/Set Exact Location and put your favorite single engine prop plane at N 041 10 04.7925, W 071 34 56.8976, Altitude 113, Heading 099. Enable Set Location of Control Tower and set up the aforementioned observer at MVY Runway 06. If you can't read the values in Figure CW.1, they are N 041 23 14.62, W 070 37 08.07. Set the altitude, as always, to 0. The "Tower" is now a virtual person five or six feet tall standing alongside MVY 06, near your intended touchdown point. Click on OK.

By the way, I'm using Jeff Jacobs' nicely-styled Cessna 172 (Figure CW.2), converted from FS5 by FSCONV.EXE. I modified its flight model to suit myself using the prolific Chuck Dome's AIRMOD—all these things being available on CIS's FSFORUM as well as at other sites in FS'dom.

Panel as Mini Flight Plan

We're now going to prepare the instrument panel so that—in conjunction with the flight title—the panel itself will provide a virtual flight plan for anyone who understands the method involved, which you will shortly. Follow along closely here and study the "Rule," i.e. the thought behind these instructions as well as the instructions themselves:

1. Set NAV1 to 114.5. Rule: NAV1 is set to the frequency of the ILS or VOR to be used, if any. Our approach will be to the MVY VOR, so the pertinent frequency is 114.5. Were we to use Runway 24 we would use its ILS approach and a frequency of 108.7. We could also opt to fly a BC (Back Course) approach to 06 using the ILS for 24 (assuming a BC approach is possible). But in the present case we're opting for the VOR approach.

2. Set the course selector of NAV1 to 050 degrees (since our course will be inbound on Radial 230; radials are numbered FROM the hub). Rule: The course selector is set to the course called for by the approach plate in use, or, if no approach plate is involved, to the bearing (nominal, or actual if known) of the destination runway. In the majority of cases (ILS approaches being typical) the course called for by the approach plate will agree with the bearing of the destination runway. The present case, as you can see from Figure CW.1, is an exception—the inbound course being almost, but not precisely, straight. The actual bearing of MVY 06 is 056 degrees.

Figure CW.2 - Jeff Jacobs' Cessna 182 at the Moffett Microgas pump.

3. Set COM1 to 126.22 or 126.20. Rule: COM1 is set to the frequency just below the ATIS frequency of the destination airport. On any PFP (Panel Flight Plan, remember?), the pilot (typically you) will always know to adjust the frequency up one notch if he/she wants the ATIS information. Slightly detuning the COM radio enables one to skip it by default (some FS pilots regard this as a blessing).

4. Set NAV2 to 115.6. Rule: NAV2 is tuned to any other VOR which you find pertinent to your flight (or is detuned by setting it to 108.0 or 117.0). I selected the

Figure CW.3 - Long final to MVY06. Panel by Marc Suxdorf (see text).

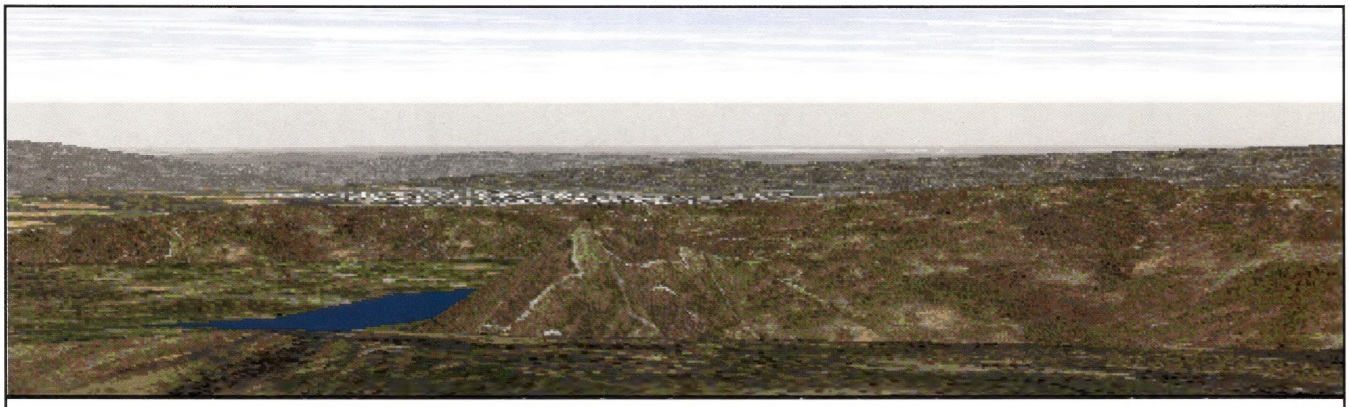


Figure CW.4 - Scenery for the soul en route to Livermore Municipal, California.

Providence VORTAC for this flight, setting up the capability for position cross-checking if and when desired (see the New York Sectional Chart on p. 72 of your Pilot's Handbook). A typical setting for NAV2 when planning an ILS approach would be to the onfield VOR, if any, at the destination airport. Another would be to a VOR which serves as a waypoint, of course; but on short flights such as are the subject of this Crosswinds there's usually no intermediate VOR needed.

5. Set the ADF to 999, to indicate that it will not be used on the subject flight. Rule: The ADF is tuned to the NDB used as a marker, if any, for approaches to the destination runway, or to an on-field NDB, if any. If no NDB is relevant to the flight, the ADF is tuned to 999 and the gauge is disabled in favor of NAV2. We'll use the ADF set to an NDB-LOM in an upcoming flight.

6. Save the flight, using the following title:

   xBID-MVY06 172 Via VOR-DME

   (For the "x" substitute your initial, or a symbol which will help you recognize PFPs of this type prepared by you.)

Rule: Save the projected flight with a title which reflects the flight plan's origin or creator, the departure airport, the destination airport and runway, the aircraft used (said aircraft being pre-trimmed and readied for takeoff), and the type of navigation and/or approach involved. The example title above meets all these requirements.

Also, you'll remember that I mentioned a "title of 31 or fewer characters" earlier. Why this stipulation? Because when you a do a directory listing of your flights each title of 31 or fewer characters will occupy a single line, and no more, and I believe in neatness in everything (except when it comes to housekeeping around my computer). The title above will appear in your Pilots directory something like this:

xBID-M~1.STN 2,134 02-09-97 10:53a xBID-MVY06 172 Via VOR-DME.STN

If your title is 32 characters long—one too many—it prints on a single line but injects a blank space in the listing. Anything longer than 32, of course, goes into two lines, making the whole listing pretty shabby-looking.

Figure CW.3 shows the instrument panel I currently use for prop planes, and the settings we use been discussing for the BID-MVY PFP. This panel is the shareware IFR3 panel created by Marc Suxdorf, and is available at various flight simulator sites. It comes in versions to cover all propeller-driven 1- to 4-engine planes. Notice atop NAV1 the switching plate for the autopilot. This is movable (and removable) and covers—besides autopilot on/off—toggles for heading, altitude, and NAV1 holds...ILS and back course locks...and wing-leveling and yaw damping. What a boon it is to have this control group readily available without need to go into a menu or remember key assignments! Note I chose to position it such that the lefthand corner of the switchplate agrees with the aircraft center, obviating the need for a windscreen axis indicator. Very handy!

Sheets in the Wind

And now we're ready for takeoff. Give her full throttle and climb straight out to about 600 feet, then stay on a heading of about 100 degrees. Plan to cruise at an altitude of 2500 feet. Martha's Vineyard will show up shortly as a shimmering green oasis on the water, a bit to the left of your course. This is a pretty good-sized island, served by ferries as well as planes from the mainland. It features yearly regattas and agricultural fairs, as well as fishing, hiking, biking, and uncrowded beaches.

As you intercept the 230 radial, with the OBI about a half hashmark from center, turn left and track the needle on your 50-degree heading. You're on a 10-mile final.

Don't be surprised if you see some huge cardboard-colored sheets (and I mean HUGE) sail by you—sheets in the wind? I see/saw 'em too, and have no idea what they are/were. You'll also see some spurious brown geography on the hori-

zon—a goof you can add to your list of Flight Simulator "Easter eggs." When you have the runway in sight, take over visually and land.

So there's your first flight using a PFP—or Panel Flight Plan, which is what I've chosen to call plans using the panel setup to convey information as we've done here. Below are two more PFPs. Now that you know how to "read" the panel, very little comment is needed; they—and you—are all ready to fly. I'll set them off by the titles you can use to save them.

xSJC-LVK25 182 Via NDB-LOM

I leave it to you to set up an observer for Runway 25 at Livermore Municipal (San Francisco Area) if you like. Then put the airplane on Runway 30L at SJC (San Jose International—it's in your Go To Airport listing). Set NAV1 to the Livermore Muni ILS (I-LVK) frequency: 110.5. Set the course selector to 254 (bearing of LVK 25). Tune the COM radio to 119.62 or 119.60—a notch below the relevant ATIS frequency of 119.65. Set NAV2 to 108 (it isn't relevant). Tune the ADF to 374, the very relevant NDB/Locater Outer Marker which you'll track until intercepting the ILS, at which point you'll turn to the runway heading for a straight-in approach. (To enable the ADF in place of NAV2, use Tab.) To see how the autopilot handles the big turn to final, turn it on (Z key) and enable localizer lock, i.e. approach hold (Ctrl+A). Fly the ADF needle until the localizer is intercepted and the autopilot takes over. Figure CW.4 gives you an idea of the great mountain scenery you'll enjoy en route to LVK.

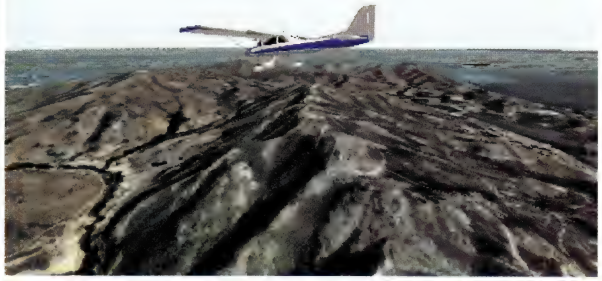
That's all there is to this "Panel Flight Plan" for your trip from San Jose International to Livermore, CA.

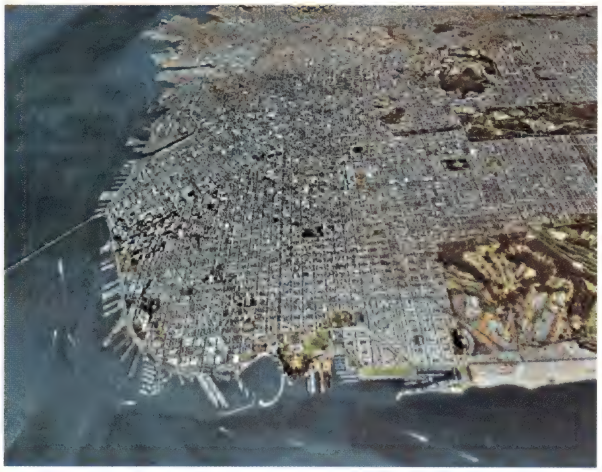
N.B. This one PFP embodies many possible flights. Try it at different hours, with different weather, including IFR weather. Works like a charm! (But if you fly it IFR, mind those mountains. You'll want about 3500 feet until you reach DME 07 NM.)

xNUQ-SFO28R 182 Via NDB-LOM

Except to tell you that NUQ is the 3-letter identifier for Moffett NAS at the foot of San Francisco Bay, and the LOM for SFO28R is the Brijj NDB tunable at a frequency of 379 on your ADF, I'll let you put together the PFP for this flight yourself. You now have all the necessary materials, knowledge and skills to do that. (*Well, haven't you?*)

About the author - Charles Gulick is the author of six books on the various versions of Flight Simulator, the "Fly" series of situation disks, and the recent "Global Wizard" adventure set for use with FS5.1 / FS95. Charlie can be reached via email to 71241.321@compuserve.com. [MW✈]





LOOKING GLASS' FLIGHT II... Looking Glass Technologies is hard at work on their first new flight sim since their hit aeribactic simulator - Flight Unlimited. These shots give you sneak peek at how they are coming along - quite well, wouldn't you say? The top left shows the FBO room where you begin your flights and make select options (much like the metaphor used in Flight Unlimited). The top-right shows the Cessna cruising above the mountains near San Francisco. The lower-left shows the full screen view with the flight status hud showing at the bottom of the screen. The lower-right shows an aerial shot as we fly over San Francisco. Flight II is expected to release this later summer.

SNEAK PEEKS

FLIGHT SCHOOL

GROUND REFERENCE MANEUVERS

THE FLUID IN WHICH WE FLY

Our atmosphere is a very thin gaseous covering of the earth's surface, held captive by the earth's gravity. If the earth were compared to an orange, this gaseous layer would be about as thick as the fruit's skin. The area most aircraft occupy is called the "troposphere" and varies in depth from an average 55,000 feet over the Equator to 28,000 feet over the poles. This air mass rotates with the earth and has a motion relative to the earth's surface. This continuous motion, called "circulation", is created mainly by the large differences between temperatures over the Tropics and those over the Polar Regions, and complicated by uneven heating of land and water areas by the sun. If it were not for the rotation of the earth and other complicated considerations, the air would move directly from the high density area (high pressure) over the poles towards the low density area (low pressure) at the equator to be reheated and circulated back towards the poles. As the air near the Equator is heated, it becomes less dense. The heated air rises, resulting in a lower atmospheric pressure than that in the surrounding area where the air is more dense because of its cooler temperature. Thus the air from the north and south moves toward the equatorial low pressure belt, forcing the warm air upward. The cooler air in turn becomes warm, is forced to rise, travels aloft towards the poles, and returns along the earth's surface to the Equator in a never-ending process (Figure FS.1). That's the theory anyway. It's kind of like when you have the air-conditioner on in the house and you open the door, the cold air goes out. The warm air doesn't come in. It has to do with pressure more so than temperature.

Due to the rotation of the earth, the air moving from the equator northward is deflected to the east. The atmosphere is in a constant state of change. In its struggle to maintain equilibrium, "wind" is created. This flow of air is caused by the horizontal pressure differences in the atmosphere. A large body of air extending over a large area (usually 1,000 miles or more across) with approximate uniform properties in a horizontal plane is known as an "air mass". The region where the air mass acquired its identifying properties of temperature and moisture is called its "source region". The predominant source regions for air masses are large snow or ice-covered polar regions, tropical oceans, and large desert areas (Figure FS.2). These air masses are better known to us as cold/ warm/ stationary fronts, or low/ high pressure areas. Air masses are accompanied by troughs, tornadoes, hurricanes, thunderstorms, up/down drafts, wind shear, clear-air-turbulence, the jet stream and who knows what else.

It's a miracle we ever get an absolutely calm day with so much activity going on within the troposphere. If you fly for fun and restrict your flying to clear, windless days, your flying will be very limited. The wind is always going to affect our flying and the best thing we can do is to learn to compensate for the effect it has on our flight path. If we can better understand how the wind is generated, and the direction from which to expect it, we can navigate our airplane more effectively. For instance, professional pilots will expect a possible right wind correction when flying into a cold front, due to its clockwise rotation (Northern Hemisphere). Or in another example, a pilot on final approach to land in the vicinity of summer thunderstorms should be thinking about a downburst of air coming from a mature storm. Imagine you're on a 5 mile final approach and you can see a storm, pouring down rain, moving towards the airport. It's not uncommon for this to become a race. The pilot will reduce power and begin a decent for landing, trading off altitude for airspeed. Trying not to be overly anxious, he/she will maintain cruise speed (possibly higher) as long as possible. Of course, this would be traffic permitting. At the last possible moment

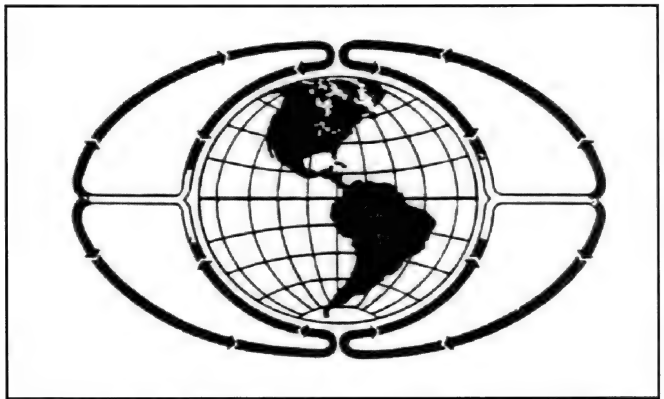


Figure FS.1 - Circulation is created mainly by the large differences between temperatures over the Tropics and those over the Polar regions.

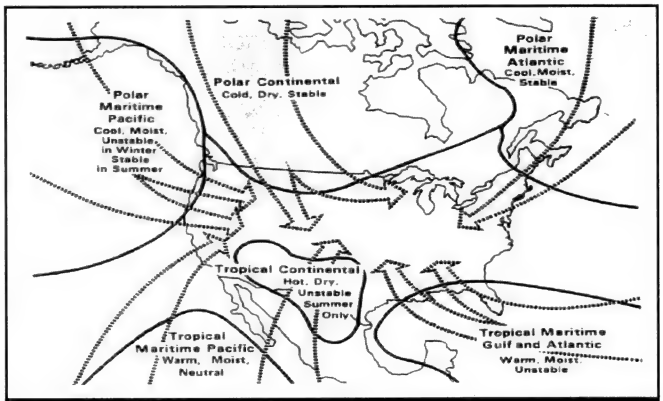
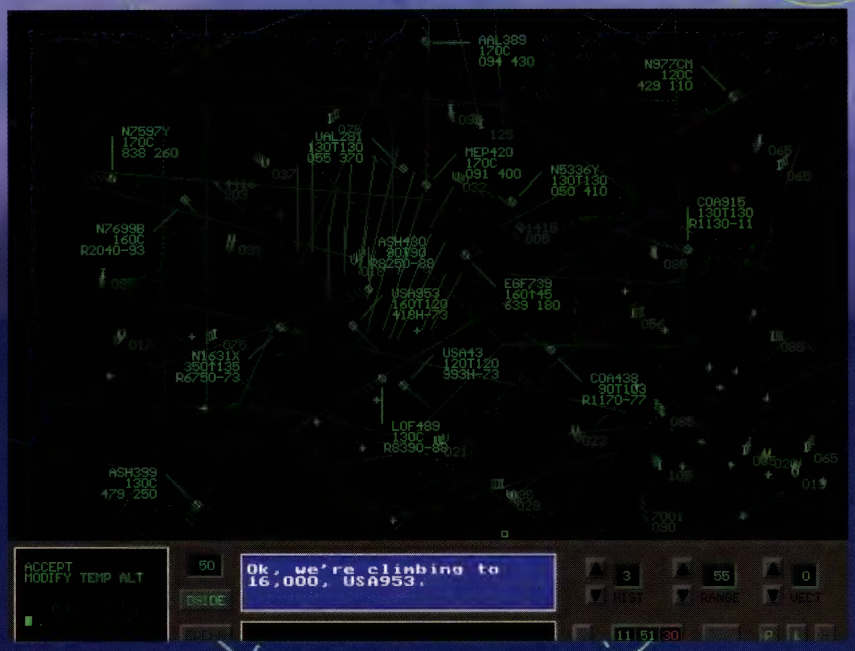


Figure FS.2 - The predominant source regions for air masses are large snow or ice covered polar regions, tropical oceans, and large desert areas.

AIR TRAFFIC CONTROL CENTER™



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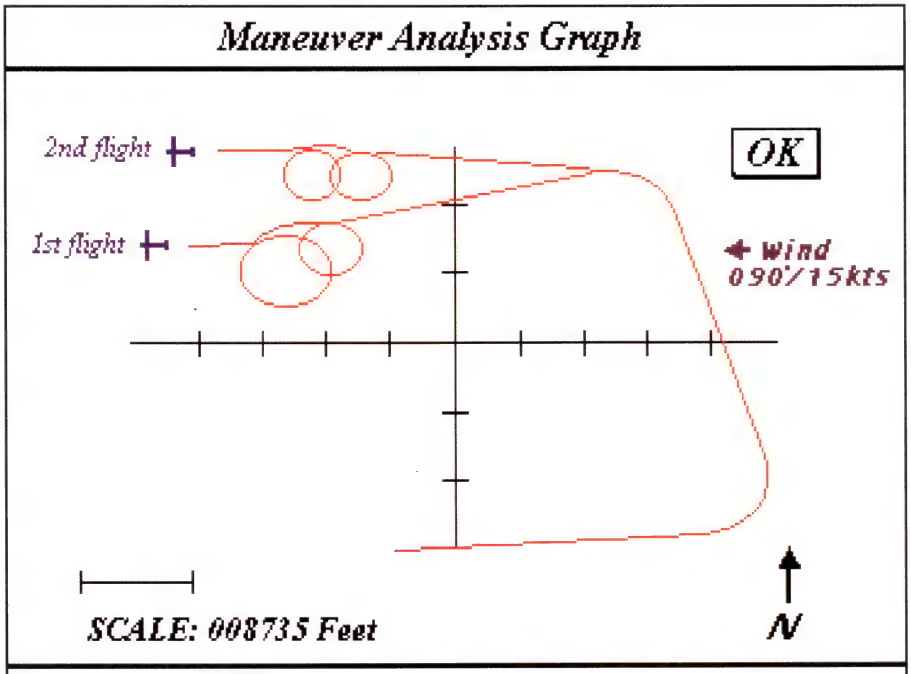


Figure FS.3 - Don't forget to turn on the maneuver analysis option in your flight sim, before each series of turns.

(about 1/2 mile final), the appropriate flap setting (if any) and gear would be lowered, the airspeed safely reduced and the landing check-list completed. Touchdown speed might be a little higher than normal just in case a strong gust occurs at a vulnerable moment during the flare to land. The seasoned pilot will always be evaluating the ever changing winds from pre-flight to tie-down. I recommend a study of the weather in general. The more you know about the environment in which you're flying, the better equipped you'll be to safely navigate its every changing character.

So, understanding the fluid in which we fly and how to safely maneuver around in it is just part of being a pilot. Serious PC simulators and programs will have some degree of weather control and can be very useful in controlling wind direction and speed. I usually have my MS Flight Simulation set to Automatic Weather Generation and take whatever it gives me. So far the weather has been VFR on every flight. But we can create a variety of weather conditions from cloud layers to temperature layers. We can control the visibility, clear air turbulence (CAT) and the speed/direction of the wind. For what we will be practicing, the wind control will be our only concern.

OBJECTIVE

This lesson is not necessarily conducted to teach navigation such as "dead reckoning", but should give the student pilot a better understanding and respect for wind correction when flying long distances. Our main objective is to become proficient at flying the airplane at low altitude, within a given path, maintaining the appropriate altitude, while dividing our attention from the inside to the outside of the airplane. Sound easy? It can be a handful for the novice and a challenge for the most experienced. Some students find this part of their training the most fun. Most of us enjoy a challenge, and on a windy day trying to maintain altitude and apply just the right amount of bank to compensate for the wind can wear you out. Frequent banking requires frequent rudder control for coordinated flight, which also must be maintained for a properly executed maneuver. In our case we'll let the Auto Coordinate take care of the rudder control. That is, of course, unless you have a Rudder Control System. If so, use it. Proper rudder control is a big part of ground reference maneuvers, but for now, we're just having fun.

Planning ahead will help prevent getting too far behind and drifting beyond the proper flight path boundary. At lower altitudes the groundspeed is more noticeable. While conducting low altitude maneuvers by reference to objects on the ground, pilots get a better understanding of groundspeed and wind drift because they can see first hand how the wind is causing the airplane to drift away from the desired flight path when not compensated for. It's also easier to see, hear and sense changes in the airplane's groundspeed. When turning directly into a strong headwind, the decrease in groundspeed is very noticeable. There is a certain over-all feeling a pilot senses while all of this is happening. It is for student-pilots the beginning of the "fly by the seat of your pants" skill that most pilots sub-consciously obtain and use throughout their flying careers. Do we "simulate by the muscle in our eyes" while concentrating on flying the PC simu-

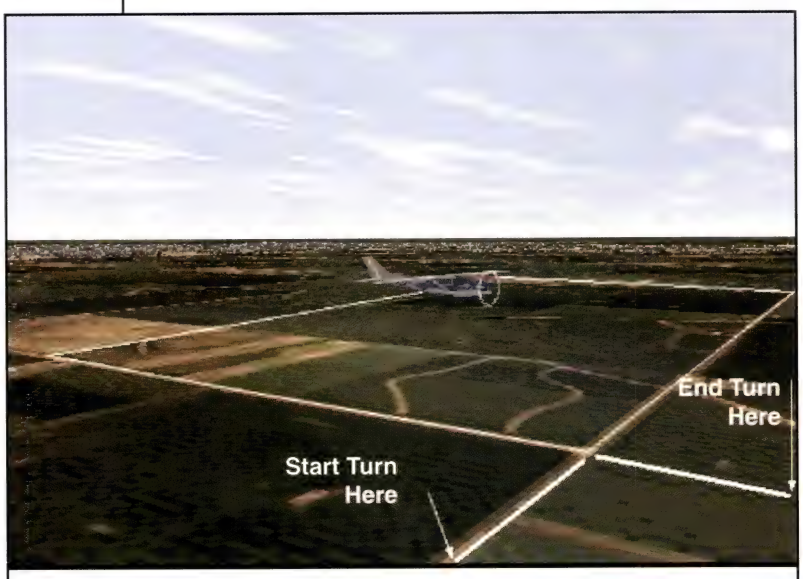


Figure FS.4 - Start your turn just as the flight path reaches the edge of the field. Roll out, wings level, with wind correction applied, at the next edge.

Figure FS.5 - Try to control your roll-out, so that you level-off just as you cross the road.

lator at low altitudes? Go back and re-read the excellent article, "The Science Of Simulations" by Tom Kopke. (MicroWINGS Vol.4, No.4) While flying this particular lesson try to be aware of your senses and which ones are being used the most to control the simulated airplane's flight path. Do you get a feel for the wind's direction and speed while flying the required maneuver?

WIND CORRECTION

When the air is still and the wind is non-existent there is no difference between the magnetic heading and the magnetic course. If the airplane is properly rigged, trimmed and in level flight the nose will point directly to our destination. However, if the air is moving, we may need the direction we point the airplane (magnetic heading) to compensate for the effects of the wind, in order to maintain our intended magnetic course. No wind correction would be necessary if the wind direction were a direct tail or headwind, however the groundspeed would be effected. Let's say we're trying to maintain a flight path straight down a road and the wind is from our right; we will drift to our left without wind correction. How far and how fast we drift away from our desired flight path and the degree of wind correction necessary to counter the drift will be determined by the wind's direction and speed. Flight calculators, as well as the old reliable E6-B flight computer, can be used to calculate the correct wind correction. Don't go looking for the E6-B flight computer program at your local software outlet because it won't be there. Even before PCs, a slide-rule type device called the E6-B flight computer was, and still is, used to calculate the proper wind correction and approximate effect the wind will have on the airplanes groundspeed. Today, handheld calculators are a useful tool when the batteries are charged, but a simple round-slide rule, like the E6-B will never fail you. No batteries required.

Wind correction can be in the form of a magnetic heading change using the directional gyro, compass or a reference point on the horizon. If we are flying west and there is a light wind from the north, our path will not be true west but drift a little to the south. If the wind is strong, we would drift southward at a greater rate, and over an extended period of time we would be well south of our destination. A light wind will call for a small compass correction to the north in order to maintain a true westerly course. A heavy wind will require a greater compass correction towards north. In a coordinated turn, the degree of bank required to counter the effects of wind (drift) is determined by the angle and velocity of the wind to the flight path of the airplane. The groundspeed will increase with a tailwind and decrease with a headwind. Most of the time we don't have time to whip out our flight computer and try to figure out what heading to fly. Sometimes you just need to experiment in order to locate the heading necessary to maintain your desired flight path, even though it is possible to call a Flight Service Station (FSS), obtain a weather briefing, get the winds aloft forecast and calculate the proper compass heading. The winds can change so much as you continue your flight and change altitudes, resent information can become obsolete quickly. But, then again, we are required by regulations (FARs) to checked into the present and forecasted weather conditions before ever departing the airport. A student-pilot will need to go through all of the pre-flight planning, while preparing for a cross-country, to get some idea of the initial compass heading to take when departing the airport. Using the map and check points on the ground, the heading will be checked and corrected, if necessary, as the flight continues.

With ground reference maneuvers it will be a little different. We will be trying to fly a path over the ground while looking outside most of the time. In other words we will be using the object on the ground and our position to it, to determine our angle of bank and altitude. Even though it is a good idea to check your airspeed and altitude indicators occasionally, try to notice the airspeed over the ground and our relative position to the object, making corrections without looking at the instrument panel. Try to maintain +/- 100 feet within your chosen altitude. Also, never make more than a 30 degree bank at low altitudes.

Low altitude maneuvers provide the necessary experience a pilot needs to combat the strong winds and to maintain a relative position over the ground. The wind will affect everything from the proper flap setting to the fuel required to complete a flight. It all begins will this type of lesson that is geared to provide experience. There will be very little difference between this simulated lesson and an actual flight lesson. The main difference for myself will be that it takes place in Paris, France instead of Paris, Texas.

FLIGHT ANALYSIS

Load up MS FS5 or whatever program you're able to follow along in, and pre-flight the plane. Go to **World** on the menu bar and choose **Airports.** Go to the **Choose a scenery area** and choose **France, Paris: Charles de Gaulle/ Rwy 10.** Go to **World** choose **Weather.** Click on **Winds, Create,** and **Surface wind-AGL, Magnetic.** Change the wind speed and direction to

090 degrees @ 15 kts. This is the place you could set up turbulence. Also, Steady/Gusty winds are an option from this menu. For now, let's fly with a steady wind and no turbulence. Now go to **Options** and choose **Flight Analysis**. Click on the **Maneuver Analysis/ OK.** Go back to the Options menu and select **Save Situation.** Now **Name/Save** this situation so you don't have to go through the entire setup again later.

Figure FS.6 - Use the directional-gyro to help remember the wind's direction to the airplane.

We should be at the end of Runway 10 at Charles de Gaulle Airport ready for takeoff. Go to **Nav/Com** on the menu bar and choose **Communications Radio**. Click on **Send Message** and **Request to Takeoff/ OK.** Squawk the required transponder code and change the radio frequency to **128.0** (ATIS). The current wind speed and direction should be transmitted. After takeoff, you may want to change to another frequency so the message will not keep repeating itself during the lesson. Every time you change to this frequency you will be transmitted the weather at Charles de Gaulle.

Before takeoff, I prefer to hit the **S** key twice to get a view of the airplane. Then I hit the **down-arrow** key to get a view from behind. Your Cleared for takeoff. Climb straight ahead, holding a heading of **090 degrees** until reaching **2,000 ft. msl**. Decrease the throttle to around 2300 rpm and trim for level flight. Now turn left to a heading of **000 degrees** (North) and maintain **2,000 ft. msl**. Hold this heading as close as possible for at least one minute. Turn left to a heading of **270 degrees.** Use your keyboard arrows (or whatever) to view the area around you. The airport should be off to our left. If you're not familiar with the area, and you're going to return to the airport you just departed from, it's a good idea to notice a few landmarks that stand out around that particular location. It might not be true in an area as unique as Paris or Japan, but here in Texas there's a lot of flat land. On a day when the visibility is marginal, at low altitudes, one field can look just like another. Now execute two- 360 degree turns to the left. Maintain a **30 degree** bank throughout the turn and roll out on your original heading: **270** degrees. After the first 360 degree turn, if you watch closely, you may see and feel the airplane shake as it passes through its own wake turbulence. Press the **(BACKSLASH (\) key** to review the **Maneuver Analysis Graph**. The graph orients itself with reference to the heading the airplane was at when the option was chosen. You should see that our takeoff was directly into the wind and it had very little effect on our climb path. After turning left (north), we had a right crosswind. The graph should show our drift to the left of course. After completing the two-360 degree turns, the graph will show our drift downwind (Figure FS.3). All of this was to demonstrate the effect the wind is having on our flight path.

RECTANGULAR COURSE

The ground elevation around Paris is about 300-400 ft.msl. Decrease the power setting and descend to **1,000 ft.msl** on a heading of **270 degrees**. You should see green fields for miles. Pick a large rectangular field and maneuver the airplane to within about a 1/4 mile from the field's boundary. Maintain your 1,000 ft. altitude and try to keep the same distance from the field as you fly its boundary. Try to get a mental picture of the wind's direction (090 degrees @ 15 kts.) and remember what it's trying to do to the flight path. On a heading of 270 degrees, we have a direct tailwind (greatest groundspeed) and no wind correction at all. On a heading of 090 degrees, we are at our slowest groundspeed. Our north/south headings will require us to counter the wind by "crabbing" into it. The degree of "crab angle" will be determined by the speed and direction of the wind.

Use the keypad to view out the side window towards the field. The airplane should be flown parallel to one side of the field until the corner is reached. Start your turn at one corner and roll-out (wings level) at the same corner and the same distance from the field as the last leg. Follow this procedure at each corner of the field (Figure FS.4). When turning, there is a direct relation between the amount of bank required to maintain the desired flight path and the airplane's groundspeed. After this becomes apparent to the pilot, ground reference maneuvers are much eas-

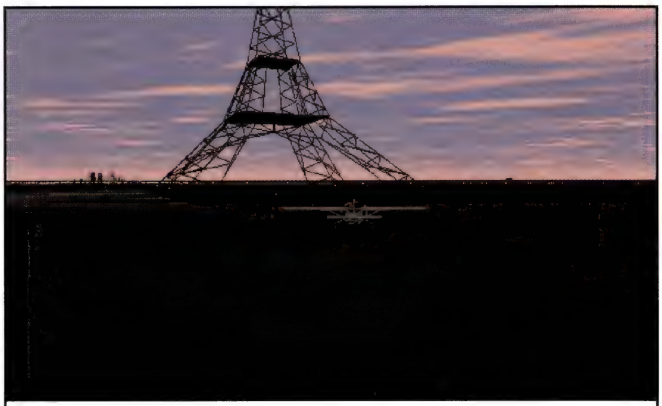


Figure FS.7 - Practice an emergency landing at the base of the Eiffle Tower.

ier to fly. The greater the groundspeed, the greater the bank. The slower the groundspeed, the less amount of bank is needed. After a few times around the field you should have a good idea what it takes to execute this maneuver within limits.

S-TURNS ACROSS A ROAD

Fly a heading of **090 degrees** and locate a long road running north/south. Maintain **1,000 ft.msl** and fly perpendicular to the road you've chosen. Your magnetic heading doesn't have to be exactly 090/270 degrees. Ground reference maneuvers require more of a flight path over the ground rather than any particular heading. Most ground reference maneuvers are more visually outside the cockpit than inside. Referring back to your instruments is necessary to continually evaluate your performance, but the objective is to fly the airplane by reference to an outside object, visually. There are other clues such as sound and the feel of the airplane on the controls that help to perform a good maneuver. It would seem we're stuck with just the visual part when simulating a flight. Or can you feel the wind increase your airspeed as we turn downwind?

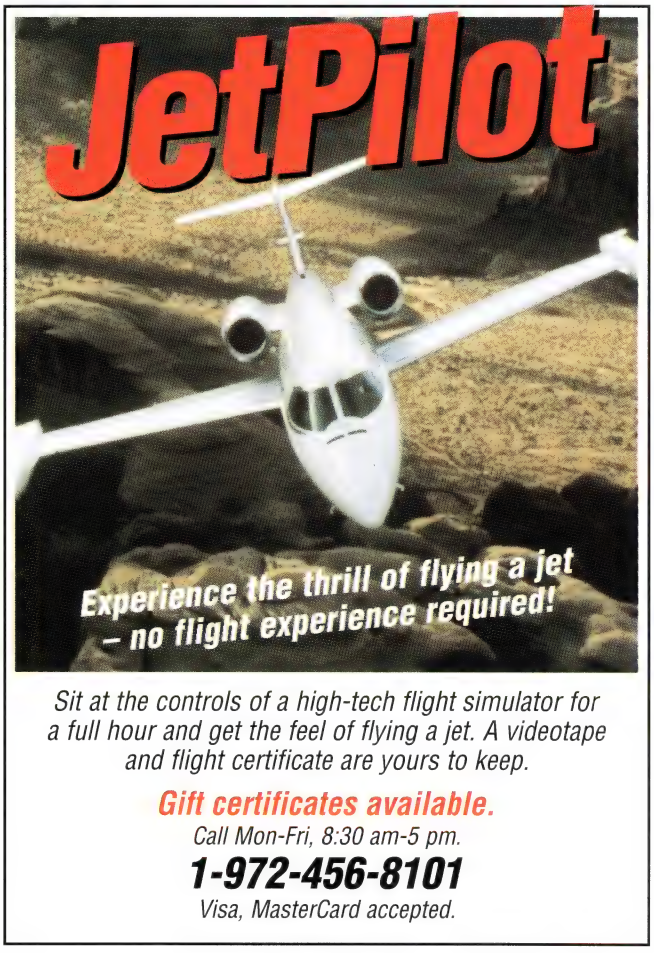
The objective of S-turns across a road is to fly a pattern of two perfect half circles of equal size on opposite sides of the road. The road should be perpendicular to the wind direction and a constant altitude maintained. Normally an altitude of 600-1,000 ft.agl is satisfactory. A good performance requires careful planning, good timing, and good basic coordination.

Entering from upwind will allow you to determine the shallowest bank you'll use through the maneuver, or close to it. At 1,000 ft. msl, wings level, fly a path perpendicular to the road. When the airplane is directly over the road, begin a very shallow bank in the direction of your choice. If the wind is strong enough, a pilot may find it necessary to wait a few seconds before beginning the first turn due to the groundspeed being at its lowest point. You just need to get some distance from the road before making that first turn. As the turn progresses, the proper distance from the road should be checked. This is the distance to be duplicated on the other side of the road. As you continue the turn, the groundspeed will begin to increase. As it does, so will the bank necessary to maintain the **S** pattern. The objective at the end of each full 180 degree turn is to roll your wings level just as the airplane crosses the road. When crossing the road downwind, don't wait. Begin your bank when over the road. This will be the steepest bank the maneuver requires. As you turn into the wind, the groundspeed will begin to decrease. The required bank will also decrease. Try to control your rollout so that you level off just as you cross the road. Now you find yourself upwind and ready to repeat the procedure again and again (Figure FS.5). Don't give up trying to improve with each S-turn made. Just remember when turning: as the groundspeed decreases, the bank will decrease. As the groundspeed increases, the bank will increase. The range of required bank for this maneuver may vary from 0 to 30 degrees. Try not to ever bank more than 30 degrees at low altitudes. The higher the altitude, the greater the bank.

DON'T FORGET TO TURN "ON" THE MANEUVER ANALYSIS option before beginning each series of turns. I have found the graph will only display the latter part of a long maneuver. You will be able to get about 3 turns on the graph at any one time. Also the graph is oriented to North, being at the top. Complete several S-turns in one direction and hit the Backslash (\) to study the flight path. Now turn the analysis option on again and proceed in the opposite direction. Hit (\) when complete. If you want get a better understanding of the wind's effect, turn on the analysis option and complete the S-turns using a 10 degree bank from road-crossing to road-crossing. Check the analysis and re-set. Now do the same thing at a 30 degree bank. You'll find yourself crossing the road before ever getting to a path perpendicular to the road and will need to roll immediately into a 10 degree bank in the opposite direction. At 30 degrees you will end up with a very sloppy S-turn and probably find yourself having to roll out to a wings-level position way before you get to the road. Try it and see what happens.

TURNS AROUND A POINT

Turn to a heading of **265 degrees** and climb to **2,000 ft. msl**. We should be north of Charles de Gaulle Airport and this heading should take us close enough to the Eiffel Tower to see it. It will take about 10 minutes to get there so you may want to increase the rate of simulation option on the panel to reduce the enroute time. Or, just enjoy the scenery as you look for the Eiffel Tower. When you spot the tower, fly to it. If it hasn't gotten dark by



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now, use the instrument panel clock and increase the time until the Eiffel Tower's lights just come on. Maintain 2,000 ft.msl and set up a path about 1/4 mile from the tower (Figure FS.6). Turn on the maneuver analysis option and fly several full circles around the tower. Check the analysis graph (\). Reset the analysis option before completing several turns in the opposite direction.

The objective of this maneuver is to circle at a uniform radius, or distance, from a prominent reference point on the ground while maintaining a constant altitude. The maintenance of a constant radius will, if any wind exist, require a constantly changing angle of bank. The pilot must make corrective actions due to the speed of the air mass in which it travels. It follows that the steepest bank is required when the airplane is headed directly downwind where it has the greatest groundspeed, and the shallowest bank is required when headed directly upwind where the groundspeed is the least. Throughout the maneuver, the bank required at any given position is proportional to the groundspeed. In how many ways can I say it?

Try a practice landing in the green field at the base of the Eiffel Tower (Figure FS.7). Take a scenic flight around Paris as the sun sets or take us safely back to the airport. Study your users manuel on how to control the different **Views** available with your particular program. It may be useful to use the **Map View**. Before takeoff, I prefer to hit the **S** key twice to get a view of the airplane. Then I hit the **down-arrow** key to get a view from behind. As a maneuver progresses you'll need to change views to keep up with your position to the ground reference being used. After you feel comfortable with these maneuvers, try pressing the **W** key (full window) and fly the same maneuvers. Use the maneuver analysis option and see if you can feel your way through an S-Turn.

About the author - Bob Pursur has been flying in the Dallas, Texas area since 1973.He has been a CFI since 1977 and has been flying computer simulators since 1980. He is a Systems Tech. with Southwestern Bell Telephone and flys out of the Lancaster and Addison airports. He can be reached via Internet email at [fltsim@swbell.net]. [MW✈]

'Review Of' and 'Getting Started' ...with Apollo Software's Scenery and Object Designer

With the introduction of Scenery and Object Designer from Apollo Software Publishing, Microsoft Flight Simulator enthusiasts now have a powerful and easy-to-use scenery development tool. In the past, scenery development programs required the user to know and use code to create scenery. Now, Scenery and Object Designer introduces a point and click graphical interface that makes it quicker and easier to create detailed scenery.

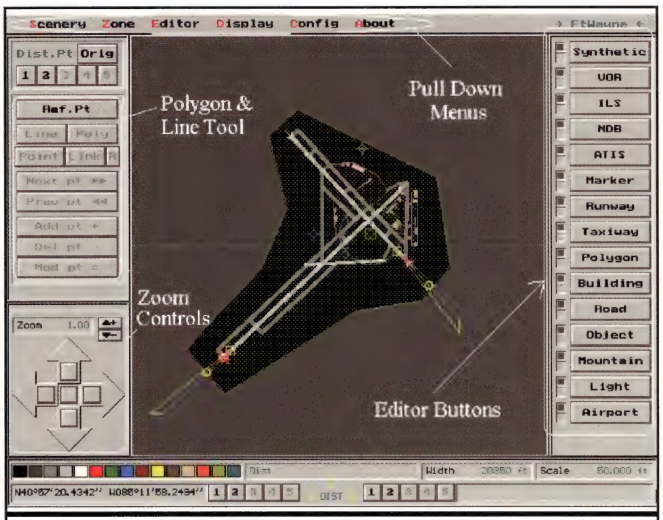
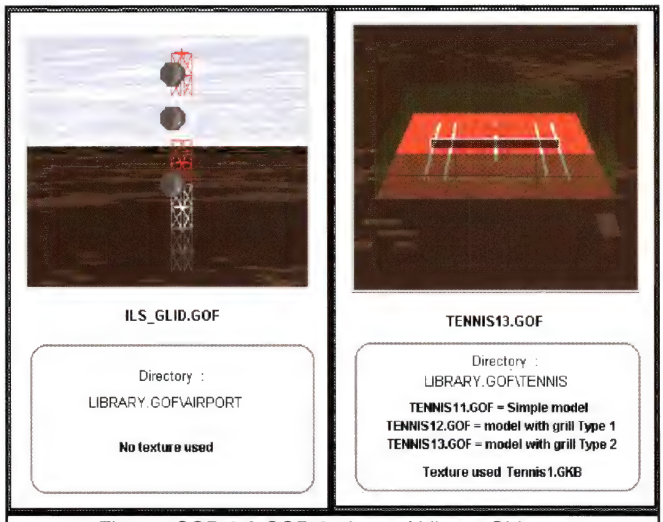


Figure SOD.1 - The Main Screen.

To better understand Scenery and Object Designer, let's take a look at the program and it's components. Scenery and Object Designer is a DOS program (works fine in WIN95) with a graphical user interface. Included with the basic scenery development tool is a library of Scenery Objects that you can insert into your scenery. Also included with Scenery and Object Designer is a separate program, Virtual Skunk Works, that allows you to use Flight Shop to create additional objects for your scenery. All of these components provide the user everything needed to create detailed scenery for Microsoft Flight Simulator (version 5.0 to 5.1).

The first component, SYD (**S**cener**Y** **D**esigner), is the scenery development program. When you start Scenery and Object Designer, you get the main screen from which you begin your scenery development. Across the top of the screen are the pull down menus that provide access to the tools of Scenery and Object Designer. These same tools are accessible via point and click buttons on the main screen. The main screen is divided into three portions. (See Fig. 1) The far left and right hand portions are dedicated to the point and click tool buttons that make Scenery and Object Designer so easy to use while the middle portion of the screen is your scenery development area. This scenery development area displays your creation as you go and also allows user access to edit scenery on the fly. This access and interaction with the file are what makes Scenery and Object Designer such an easy program to use.



Figures SOD.2 & SOD.3 - Lots of Library Objects.

The second component to Scenery and Object Designer, is the scenery library provided on the CD. This library contains over 700 static objects that can be added to your scenery. These objects range from airport related scenery (signs, towers, hangars, etc.) to buildings to forests to tennis courts and more. (See Fig. 2 & Fig. 3)) The creators of Scenery and Object Designer provided a very thoughtful addition to this portion of the program. They put together screen shots of these objects into an "on-line" manual that allows the scenery developer to see the object prior to it's inclusion in the scenery file. Also included in the "on-line" manual is information on the textures used with each object. This is very important if you want to share you creations with others (you have to include the texture files with the scenery file or the objects will not display properly). These static objects add an

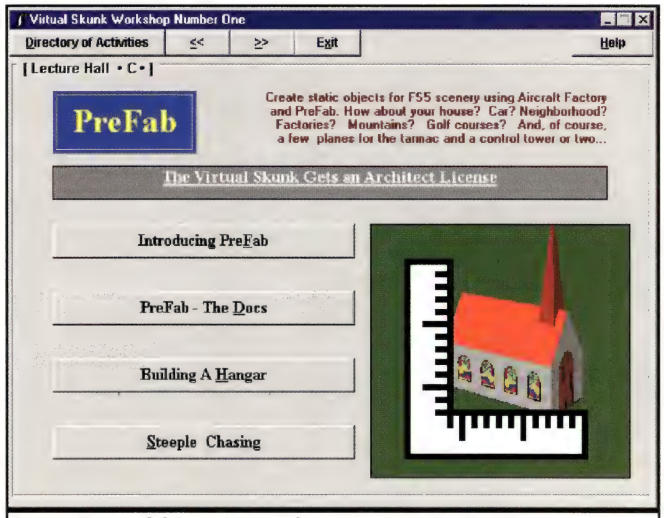

Virtual Skunk Workshop Number One
Directory of Activities
Exit
Help
[Lecture Hall • C •]
PreFab
Create static objects for FS5 scenery using Aircraft Factory and PreFab. How about your house? Car? Neighborhood? Factories? Mountains? Golf courses? And, of course, a few planes for the tarmac and a control tower or two...
The Virtual Skunk Gets an Architect License
Introducing PreFab
PreFab - The Docs
Building A Hangar
Steeple Chasing

Figure SOD.4 - Virtual Skunk Works' PreFab Program.

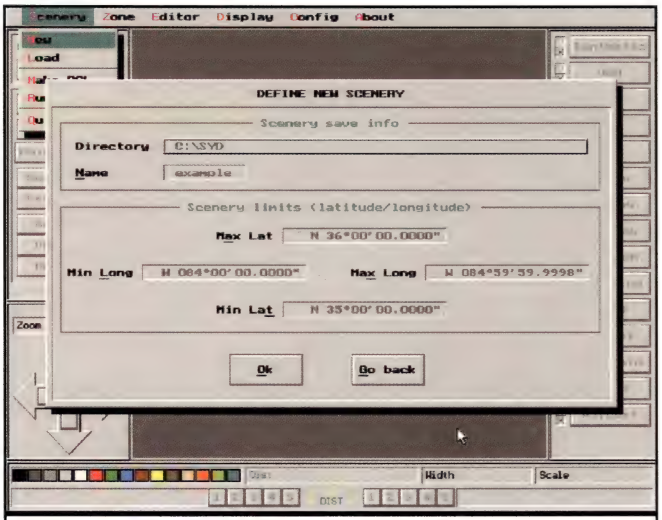


Figure SOD.5 - Starting a New Scenery.

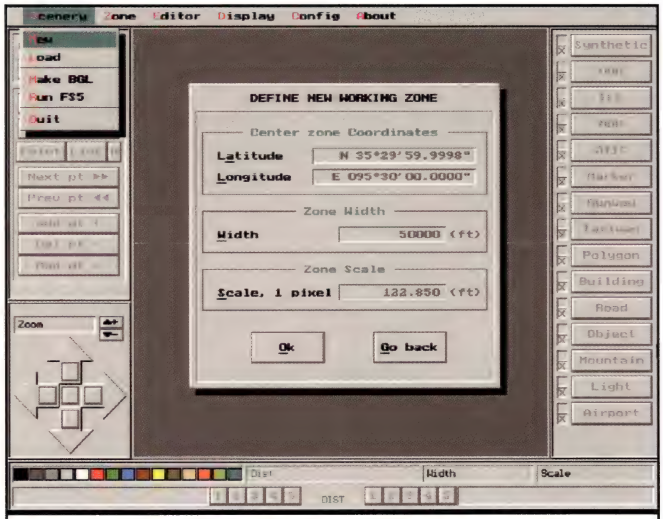


Figure SOD.6 - Defining the Scenery's Area.

extra layer of realism to the scenery you create.

The third component of Scenery and Object Designer is the Virtual Skunk Works program. This program provides information on creating and inserting your own scenery objects into Microsoft Flight Simulator. This program is broken down into two main parts. The first is a tutorial on creating your own objects. If you are accustomed to creation of aircraft using Flight Shop, then this will be familiar territory. If not, then everything that you will need to know about creating your own objects can be found here. The second part of Virtual Skunk Works is the Prefab program that compiles your object into a .bgl file so that it will display when you run Microsoft Flight Simulator. Again, all the information you need to understand this program is included. Once you have the object designed, you use a text file to tell Prefab where in your Microsoft Flight Simulator world the object should be placed. When the Prefab program runs, it looks to this text file for information on location, orientation and scaling of the object and then creates a .bgl file in your Microsoft Flight Simulator scenery directory. Since Flight Shop is used to create the objects, aircraft created in Flight Shop can also be turned into static scenery objects. All you need is the .afx file for an aircraft and you can add it into your scenery. The ability to include objects that you create provides an added tool for the development of realistic scenery.

Now that we are familiar with the components of Scenery and Object Designer, let's look at what we can do. Adding scenery to your Microsoft Flight Simulator virtual world gives the simulation more realism and provides a greater level of satisfaction to the virtual pilot. Scenery and Object Designer provides the tools to create very basic to very elaborate scenery. The level to which you want to go is limited only by your imagination. If you can dream it, you can create it using the tools provided with Scenery and Object Designer.

There is some information you will need to know before you get started. If you are working on a real airport, or creating one of your own, you need to know where it is located. This location is represented by Latitude and Longitude coordinates. Once you know where the airport is located, you need to know the altitude, above sea level, of the ground on which the airport will be placed. There are many resources for this information, but the easiest is right on your desk. Microsoft Flight Simulator includes a tool that allows you to place your aircraft at a specific location. With Microsoft Flight Simulator started, choose World, Set Exact Location from the pull down menu. Enter the Latitude and Longitude of your airport and enter an altitude of 0, then click on OK. This will take your aircraft to the coordinates you provided and place you on the surface of the earth at that point. You can now read the altitude right off the altimeter. Another piece of information you will need is the Magnetic Variation for this location. The Magnetic Variation is the difference between true north and magnetic north. Again, we can use Microsoft Flight Simulator to get this information. With your aircraft in the location you chose via the World, Set Exact Location command, go back to the pull down menu and choose World then Set Exact Location. This will display the information about where your aircraft is currently located - including the Magnetic Variation. Armed with this information, you are

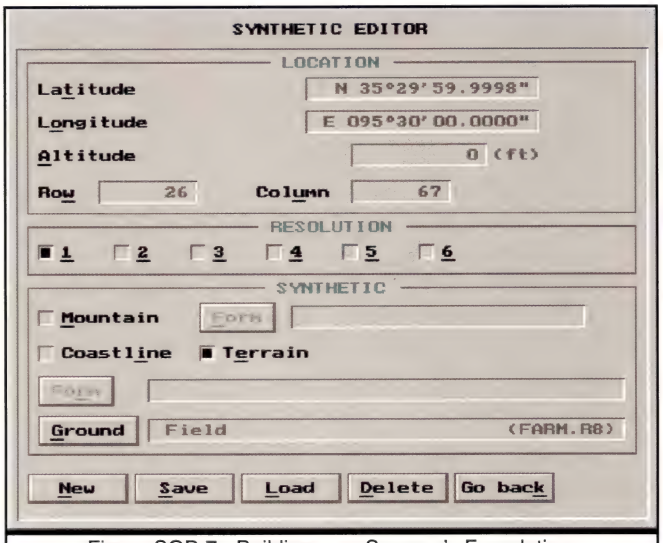


Figure SOD.7 - Building your Scenery's Foundation.

ready to begin your project.

We will not go through every step for creating scenery here, but will review some information that will help you get started. To better understand scenery development and Scenery and Object Designer, an understanding of how Microsoft Flight Simulator views scenery is necessary. Microsoft Flight Simulator uses areas, either squares or rectangles, to cover the globe. The foundation for the scenery we develop using Scenery and Object Designer will also be a square or rectangle. Armed with that fact, we can now look at how to create scenery with Scenery and Object Designer.

Once you start Scenery and Object Designer, you will get the main screen. It is helpful to have a map or aeronautical chart that includes the area with which you will be working. The first step to creating scenery is defining the scenery area within which we will be working. The second step is building a "Tile" on which our airport will be placed. A "Tile" is a square area of varying size that becomes the foundation for our scenery. Before building the tile, we have to go back to step one and define the area within which we will be working. We need to define the top and bottom and the left and right sides of the area in which our airport will be located. These boundaries are the north and south latitudes and the east and west longitudes surrounding our airport. To make this process easier, choose the latitude and longitude lines themselves to define the area (for example, N 35 00 00.0000 instead of N 35 45 56.1141). With the boundary information handy, it is time to start building our airport.

To begin the creation of our scenery, choose, from the pull down menu, "Scenery" then "New". You will get a menu box labeled "Define New Scenery". (Fig 5.) The first step is to name the scenery file (the airport identifier makes a good name). Enter the name of your scenery file in the box labeled Name and hit enter. We now need to define the boundaries of our scenery area. Enter the northern most boundary latitude in the box labeled "Max Lat", the southern most boundary in the box labeled "Min Lat", the western most boundary in the box labeled "Min Long" and the eastern most boundary in the box labeled "Max Long". Note that the "Min Long" may be a higher numeric value than the "Max Long" figure. This is fine, as long as you followed the rule of using the western most longitude as the "Min Long". Once all of these figures are entered, click on OK. You will be presented with another menu box labeled Define New Working Area. (Fig. 6) Into this box you will enter the data that define the center point of the airport you are creating. It **does not** need to be the center point of the area you just defined. Enter the center point coordinates of your airport into the Latitude and Longitude boxes in the section labeled Center Zone Coordinate. Once that is done, you need to define the width of the Zone. This tells Scenery and Object Designer how much area to display in the main screen. Replace the figure in this box with 50000. This will narrow the display to one that you can work with once you start adding runways to your airport. With the Center Zone Coordinates and Zone Width values entered, click on OK. This will take you back to the main screen with the Center Zone Coordinates marked in red. It is now time to build the tile, or foundation, on which the airport will be placed. On the right hand side of the screen is a column of buttons. The top is labeled Synthetic; click on it. You get a menu box titled "Synthetic Editor". (Fig. 7) The "Location" information already has the center zone coordinates entered, so all you need to enter is the altitude of the airport. Leave the resolution at "1". (The resolution refers to the size of the Tile.) The next part of the Synthetic Editor box is "Synthetic". Click on the box for "Terrain" (to tell Scenery and Object Designer that we are building a "Ground" tile) and then click on "Ground" (which became active when you clicked on "Terrain"). When you click on "Ground", you get a menu box titled "Ground Texture". This menu box lists the .r8 files in you FS5 directory that you can choose to be displayed for this tile. For your first project, use Field (FARM.r8). Click once on this file and then click on OK. You will now see Field (FARM.r8) displayed in the "Ground" texture block. Click on Save and enter an name for this tile and click on OK. This takes you back to the "Synthetic Editor" menu box . Click on Go Back to get to the main screen. We now have our tile laid down and can begin placing the other portions of our scenery.

To better understand how to get around in Scenery and Object Designer, let's look at the tools provided for this purpose. At the

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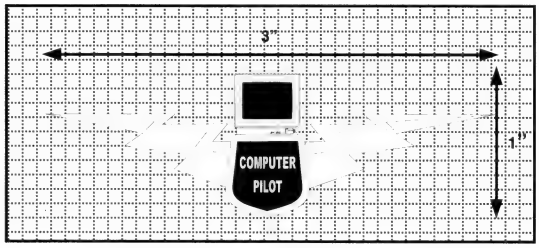

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bottom right portion of the screen, there is a box labeled Width with the value 50,000 displayed. Click here with your mouse and you can change the 50,000 value to allow you to zoom in on your airport. A value of 10,000 to 15000 usually provides a scale that is easy to work with. You can also move left, right, up and down with the buttons provided at the bottom left hand portion of the screen. Before using these buttons, you will probably want to zoom in further on your scenery. Directly above the direction buttons is a box labeled Zoom with a value of 1.00 displayed. To the right of this box are two buttons labeled with up and down arrows. You can use these up and down arrows to zoom in and out on your scenery. You can also zoom in by clicking within this box, which brings up another box in which you can change the zoom value. For detailed work on your scenery, the closer you zoom in, the more accurate your object placement will be. The right and left mouse buttons are used liberally. The right mouse button allows you to mark locations on the screen that designate the location of scenery objets. The left button is used for activating buttons on the screen and for defining points used to create Lines and Polygons. To add scenery to your airport, there are Editor tools that allow you to define the attributes for each piece of scenery. These editors are Synthetic, VOR, ILS, NDB, ATIS, Marker, Runway, Taxiway, Polygon, Building, Road, Object, Mountain, Light and Airport. These are the order in which they are listed on the right hand portion of the main screen, but are not in the order in which you will use them. Let's look at these editors and their individual functions.

The first thing you want to add to your scenery is a runway, so we will look at the Runway editor first. This editor allows you to define the attributes of the runway(s) for you airport. You can define the location (of the center of the runway), orientation, length, width and markings of the runway. Also available via the Runway editor is the runway lighting, approach lighting, and VASI attributes and placement. Once you enter the attributes of this runway, click at the bottom right portion of the Runway editor box to define the attributes of runway at the opposite end. All that is left is to save the runway and then click on Go Back to see your runway. Go ahead and add any other runways your airport may have. Remember that you can right click on a location of the center of the runway on the screen to mark it (with a white "X") and then go to the editor and the coordinates of the white "X" are automatically entered as the location coordinates.

The other editors allow you to create and or define the attributes of just about every other piece of scenery you will use. Let's look at each quickly. The Polygon editors allow you to define the attributes of polygons, which can be used to outline the airport property (which is helpful to do so that the airport can be distinguished from the surrounding area), build tarmacs (or ramps), build bodies of water, or anything else your imagination allows. The Taxiway editor allows you to define the attributes of your taxiways. This includes the width and color of the taxiways. The Object editor allows you to place and define the objects provided with Scenery and Object Designer. The Building editor allows you to place and define buildings at your airport. The Airport editor allows you to define the locations on the airport that you can choose in Microsoft Flight Simulator to place your aircraft. The Light editor allows you to create taxiway, boundary, and flashing lights in your scenery. The Mountain editor allows you to define the attributes of and create mountains and hills from polygons you created on screen. The Road editor allows you to define and place roads in your scenery. The Marker, VOR, ILS, NDB and ATIS editors allow you to create and place these items in and around your airport.

Once you have the airport complete in Scenery and Object Designer, you need to compile it into a scenery file that Microsoft Flight Simulator can use. This is done with a couple of mouse button clicks. Choose from the pull down menu, Scenery, then Make and you will get the editor box for the compilation program. The first step here is to enter the path to which Scenery and Object Designer should write the scenery file. If you are using the default scenery path for Microsoft Flight Simulator, it would be "c:\fltsim5\scenery". Once this is complete, you need to tell Scenery and Object Designer what to include in your scenery file. You will see a list of items that represents each piece of scenery that can be included and you just click on the items that you want to include. All that is left is to click on Make to compile the scenery file. You can now go to Microsoft Flight Simulator and view your new airport (NOTAM: it is actually best to check your work as you go as this will help you catch anything that needs to be moved or changed).

Don't forget the Virtual Skunk Works portion of the package, as this is where the real creativity can be applied. You can create anything that you want, including custom signs and buildings, plus you can create static aircraft objects for any Flight Shop aircraft for which you have the .afx file. Between the scenery design portion of the program, the scenery object library provided and the Virtual Skunk Works Prefab program, Scenery and Object Designer provides the most powerful scenery development tool available on the market.

The best way to learn Scenery and Object Designer is to dive in with both feet. If you have never created scenery before, then you will probably experience some initial frustration. Don't get overly frustrated and understand that this is all part of the learning process. There are few software programs that you can load and immediately know everything there is to know. Such is the case here. Scenery and Object Designer offers everything that you need to create scenery to any level of detail that you can imagine. A program with that capacity takes some time to learn. The great thing about Scenery and Object Designer is that the basics come quickly and before you know it, you will be turning out scenery that before only existed in your imagination.

About the author - Hal Groce is a devoted flight sim enthusiast and CEO of one of the most successful new virtual airlines - WestWind Airlines. He can be reached via email directed to: hgroce@mindspring.com. [MW✈]

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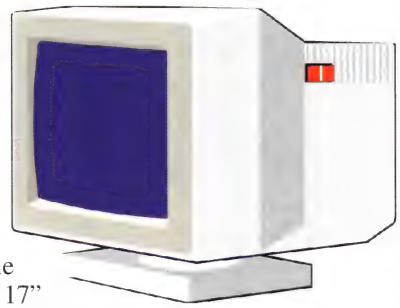
BUILDING YOUR OWN COCKPIT

A continuation of the original 5 part series

A Sight To Behold! Video Options For Cockpit Builders

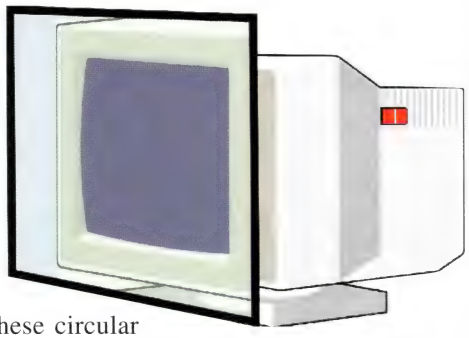
Visuals are quite possibly the most important consideration in building a cockpit, especially for one to model VFR (where you can see where you are going) flying in addition to IFR (in the clouds or low visibility) flying. There are four basic methods to display the visuals generated by the flight simulation: Using a simple monitor, using a Fresnel Lens, using a Collimator, and using a projector. I'll cover each of these methods individually, describing how they work, listing the pros and cons, etc.

Simple Monitor



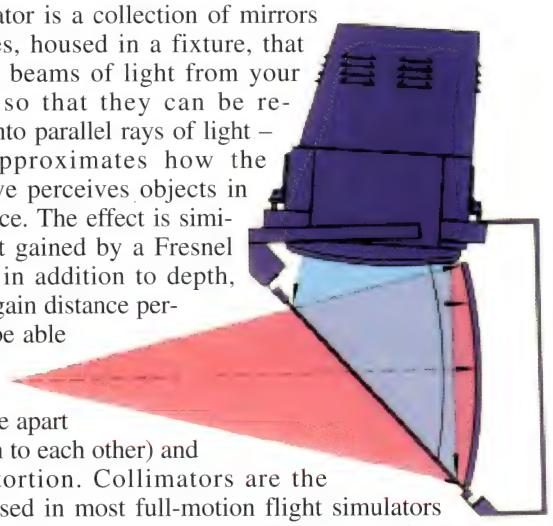
The monitor is a simple solution: Plug it in and start flying. The most obvious benefit is that we all, already, have a monitor – so this solution is also cheap in that we do not *have* to purchase anything else. For a cockpit, you want the monitor to be at least a 17" monitor, and a 21" monitor would be ideal. The larger the monitor, the more life-size the instruments and out the window view will be.

Fresnel Lens



A Fresnel lens is merely a flat magnifying glass (or more likely, plastic). To achieve the magnifying effect, and still be a flat sheet, a Fresnel lens has ever larger circles etched into it. These circular etchings refract the light passing though them to magnify the image. So, now we know that a Fresnel lens magnifies the image – what else does it do? Well, it also adds a sense of depth. As you look at your flat 3-D monitor, through a Fresnel lens, the image will appear to almost go deep into your monitor. A runway will appear to have depth. This sensation of depth adds a great deal to the perceived realism of the simulation. Fresnel lenses come in all sizes and price ranges. Since the lenses have a tendency to distort the image when viewed from an angle or near the edges, the better the lens, the less distortion (although there will be some simply due to the mechanics of how they work). A cheap lens will have you reaching for aspirin to help your headache! Good Fresnel lenses can be purchases for around $100-$200 – and that is for a 17" to a 21" size lens. You should definitely purchase a lens that is larger than your monitor by at least one extra inch on each edge. Be careful about buying one that is too large, as the lenses tend to crack if you try to saw them – no matter how gently. We found, that if you need to cut one down smaller, use a solder gun with a flat tip. Use the solder gun to literally melt your way through each needed cut. It takes a while, but at least you will be able to cut your lens down without cracking it. A source for Fresnel Lenses is Edmund Scientific Catalog out of Barrington, NJ, at 609-573-6240.

Collimator



A collimator is a collection of mirrors and lenses, housed in a fixture, that splits the beams of light from your monitor so that they can be refocused into parallel rays of light – which approximates how the human eye perceives objects in the distance. The effect is similar to that gained by a Fresnel lens, but in addition to depth, you also gain distance perception (be able to gauge how far objects are apart in relation to each other) and zero distortion. Collimators are the method used in most full-motion flight simulators used by airlines, etc. They are expensive, starting at almost $2,000 usually, and are tricky to build and get setup just right. The result, however, is well worth the investment of time and money. Collimators also magnify the image by a large factor. A simple 14" monitor can generate an image that is almost 25" (nearly double)! A 21" monitor can generate an image larger than 3 feet!. For more information on collimators and a source to buy them from, contact Glass Mountain Optics out of Austin, Texas, at 512-339-7442.

Projector

There are two types of projectors – one that projects an image on to a wall or special screen, and one that is built-in to a television set (also known as projection set TV's). Either type is very expensive, although used sets can be found for reasonable prices (at least in relation to new ones or to collimators). Projectors are very good in that they project a near life-size image and are very easy to setup (just plug them in). The TV based projectors suffer though, from a lack of crispness in the image displayed. For night time flying,

the lack of crispness is not a problem, as you are mainly looking at points of lights on the ground and horizon. Daytime flying is a different story – where blurry edges can be distracting. Another drawback to Projectors is that they require a good deal of physical space – something most home based cockpits do not have (unless you are single! ☺). However, if done just right, the wrap-around viewing angle of 3 large projectors can result in a very believable depiction of the view outside the cockpit.

Single Views, Multiple Views, and Multiple Sources

Same Views are two or more monitors showing the same image. Most home built cockpits that are for two pilots should always have the front two monitors showing the same image, so each pilot can see straight ahead out the window without having to lean one way or another. To generate two video outputs with enough signal strength to drive two monitors, you will need to get an SVGA Video Splitter/Amplifier. We purchased the one for our cockpit from JDR Microdevices (part # VGA-MULTI-4, $199.95, tel: 408-494-1400, out of San Jose, CA, USA). The model we purchased supports up to four monitors being hooked up. This was useful for placing two additional monitors on top of the cockpit so that the crowd gathered around the cockpit at shows, etc. – could see what is going on in the cockpit.

Multiple Views are two or more monitors showing different images from the same source – such as the Front view on one monitor, the left-front view on another, and the right-front view on a third… giving a nice wrap around effect where you actually turn your head left and right to take in the whole view – like in the real world! Now the big question – just how do you get flight sim to show you more than one view at a time.

Well, with FS95, you can't – yet… With FS5.1, you can with a product called Schiratti Commander (a.k.a. Flight Zone in the USA). While Schiratti Commander only costs $49.95, you will need a separate PC for each view you want, and, all the PC's will need to be networked. Notice that in the figure shown, we depict a setup requiring 5 PC's. One for the left/front, one for the front, one for the right/front, one for the instruments, and one for the map display. The setup shown would also require two SVGA Splitter/Amplifiers. One driving the two front views and the other driving the two instrument views. Notice also, how using different size monitors can add to the right look of the simulation. The map view is added in the cockpit console to function as a Moving Map display or a semi-GPS unit.

Multiple Sources are two or more monitors showing not just different images from the same source, but rather different images from different sources. In the figure shown for this setup, the top seven monitors are all showing images from Flight Simulator, where as the bottom two are showing images

from Schiratti Commander and other software that allows you to hook into Flight Sim via networked or serial cable linked PC's.

This setup is outstanding and is the ultimate – however it is also the ultimate in cost! To do the setup shown, you would need seven PC's, all networked, four 17"+ Monitors, 2 15"+ monitors, and three 6"+ monitors. That is quite a setup and a setback financially! But… the result speaks for itself!

Our series on cockpit building will continue with the next issue – don't miss it! *[MW✈]*

FLY TIPS

Turn Radius

The table shows the turn radius (nm) and turn rates (degrees per second) for speeds from 150 to 300 kts (TAS), at constant altitude, for three bank angles(BA). The values are from the equations r=v^2/(g*Tan(BA)) and turn rate=57.3*v/r.

	20 DEG.		25 DEG.		30 DEG.	
SPEED	RADIUS	RATE	RADIUS	RATE	RADIUS	RATE
150	0.9	2.7	0.7	3.4	0.6	4.2
160	1.0	2.5	0.8	3.2	0.6	3.9
170	1.2	2.3	0.9	3.0	0.7	3.7
180	1.3	2.2	1.0	2.8	0.8	3.5
190	1.4	2.1	1.1	2.7	0.9	3.3
200	1.6	2.0	1.2	2.5	1.0	3.2
210	1.8	1.9	1.4	2.4	1.1	3.0
220	1.9	1.8	1.5	2.3	1.2	2.9
230	2.1	1.7	1.7	2.2	1.3	2.7
240	2.3	1.7	1.8	2.1	1.5	2.6
250	2.5	1.6	2.0	2.0	1.6	2.5
260	2.7	1.5	2.1	2.0	1.7	2.4
270	2.9	1.5	2.3	1.9	1.8	2.3
280	3.1	1.4	2.4	1.8	2.0	2.3
290	3.4	1.4	2.6	1.8	2.1	2.2
300	3.6	1.3	2.8	1.7	2.3	2.1

THE PILOT SHOP

Hot Download Files For Flight Sims

(pictures on next page)

A note about location of files - The locations listed in this column indicate a confirmed source, but they may usually be found at other web sites or on-line services such as CompuServe, MSN, or AOL.

B7672JL1.ZIP (Bytes: 225kb)
Author: Tetsuji Konohira
Location: http://wings.ark.com/ - fs5 page, FSFS Aircraft button

The first wave of Flight Shop aircraft varied greatly in quality, but now it seems that more and more artists are learning to work in this new medium. This Boeing 767-200 in Japan Airlines markings is a good example of the new, more highly-detailed FSFS aircraft that are starting to appear. Designer Tetsuji Konohira has created a model that looks great and flies very realistically and he has even included a new jet sound file and flight manual.

CANARISL.ZIP (Bytes: 1,146kb)
Author: Francisco Urquia Martin
Location: http://wings.ark.com/ - fs5 page, Scenery button

Francisco Martin's highly detailed scenery of the Canary Islands features fully textured 3-D terrain and airports with taxiways, buildings, hangars and static aircraft. The harbors are filled with boats of all sizes and the skies are filled with air traffic - watch out for three F-18 fighters in tight formation! All navaids and airports are represented and the package even includes pre-formatted FSFS import files for creating Adventures. There are lots of sights to see if you prefer to take a VFR tour, including a volcano, beaches, and towns. There are also roads, lighthouses and smokestacks that can be used as navigational landmarks. Francisco has also provided an informative text file that will ensure that you won't miss anything.

KASD_V6.ZIP (Bytes: 116kb)
Author: Jerry Dickson
Location: http:wings.ark.com/ - fs5 page, Scenery button

Here's something a little different! Now you can fly the famous Reno Air Race course, complete with pylons and a detailed rendition of Reno/Stead airport. Textured mountains in the background and colorful hot air balloons floating nearby add to the atmosphere.

CANA320.ZIP (Bytes: 94kb)
Authors: Peter Herrmann and Joel Branchu
Location: http://www.nat.fr/joel/

Joel Branchu must surely be one of the most prolific and talented repainters around. He specializes in French and Canadian airliners, and in this case he has created Peter Herrmann's Airbus A320 model in Canadian Airlines International colors. You can find this and many other fine FSFS aircraft on his web page at the address above.

APT200.ZIP (Bytes: 3511kb) - APT201P.ZIP (Bytes: 619kb)
Authors: Pascal Meziat (Apt) and Manfred Moldenhauer (SCASM)
Location: http:wings.ark.com/ - fs5 page, Design button

The latest version of this popular freeware scenery design system has been completely rewritten for the Windows 95 environment. Why is it so popular? It combines the extremely powerful SCASM scenery compiler with a user-friendly graphical front-end. Numerous capabilities have been added over the last few months and the program now allows a scenery designer to add any scenery element desired including navaids, runways, taxiways, hangars and other buildings, trees, coastlines, and now even textured 3-dimensional terrain. Even with the graphical interface, expect to spend some time with the excellent manual and in the on-line help menu - scenery design remains a complex process and the novice will find that there's a lot to learn. Be sure to obtain and install the version 2.01 patch, too.

SCB_V20.ZIP (Bytes: 2392kb)
Author: Peter A. Jacobson
Location: http:wings.ark.com/ - fs5 page, Design button

While Airport 2.0 started life as a runway/navaid editor which has now acquired terrain-modeling capabilities, Peter Jacobson's Scenery Builder program started out mainly as a terrain-creation tool. It's main strength is the unique way it can convert graphical map data into either SCASM or FSASM scenery code. Using Scenery Builder, it's easy to create accurate coastlines, islands, rivers, roads, and mountains. Peter has recently ported it to Windows 95 and has enhanced it with airport design features. Now that Airport 2.0 and SC Build 2.0 overlap in most areas, designers are faced with the choice of using one or the other. For most it will probably come down to sticking with the program they have already learned. Or they can do what many others do: use both! In any case, the availability of these two powerful scenery design programs bodes well for an increase in realistic scenery for MS Flight Simulator fans all over the world.

B737SWAT.ZIP (Bytes: 95kb)
Author: Jan Moons and Tom Ehmann
Location http://wings.ark.com/ - fs5 page, FSFS Aircraft button

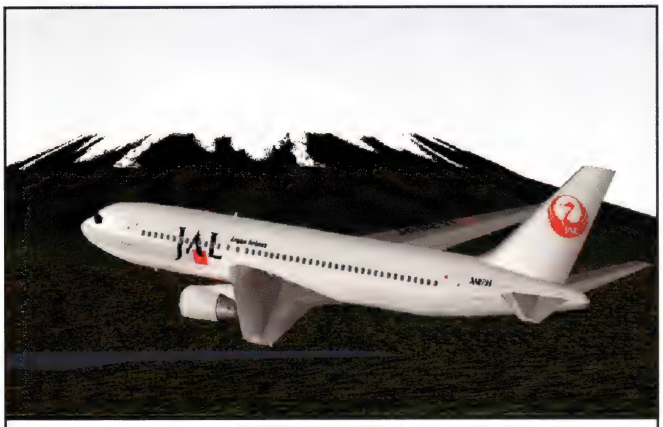
Southwest Airlines are famous for their "Flying Billboard" aircraft that promote everything from television programs to casinos. But what happens when you have more airplanes in your fleet than advertising contracts? Well, you let loose the graphic artists, of course! This example represents "Lone Star One", a salute to the spirit of Texas. It began as Jan Moons' excellent Boeing 737-300 and has been repainted in a striking stars-and-stripes motif by Tom Ehmann. He has also painted "Arizona One" (b737swaa.zip) and "California One (b737swac.zip).

WIDELEAR.ZIP (Bytes: 152kb)
Author: Don Stegall
Location ftp://wings.ark.com/wings/fs6/widelear.zip

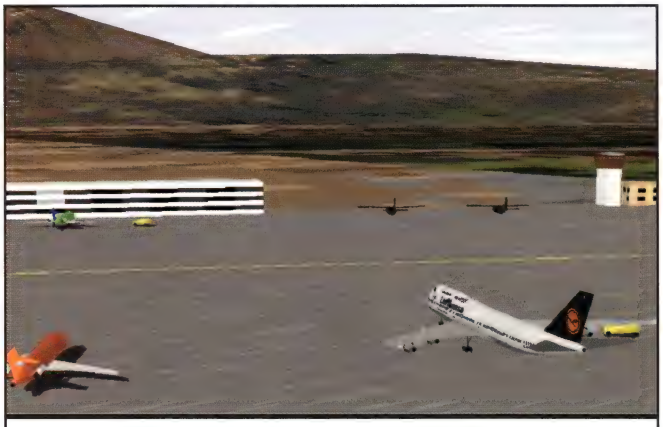
I've often wished that I didn't have to use the TAB key to switch between the different sections of the instrument panel. With this new collection of panel files (and FS6) it's now possible to have all the instruments and indicators in view at once. Four different configurations are available to choose from and simple step-by-step installation instructions are provided.

About the author - Eric Mitchell is a web site designer, aviation artist, and former Maritime Patrol Navigator who enjoys flying Flight Simulator 5 as well as designing Flight Shop aircraft and scenery. He maintains the wings.ark.com web site and introduces some of the newest and most interesting files in this column. Eric can be reached via e-mail at mitchell@mars.ark.com.

If you do not have a modem... MW can provide you with whatever files you are wanting (provided we have the author's permission to distribute their files). Contact us via tel., fax, or mail for file availability, ordering information, etc. For this service, we charge $5 per disk (USA) or $8 per disk (Int'l). Note that this is a per disk charge, not a per file charge. A disk is a 3.5", 1.44 MB floppy. If more than one file will fit on one disk, then you only pay for one disk. *[MW✈]*

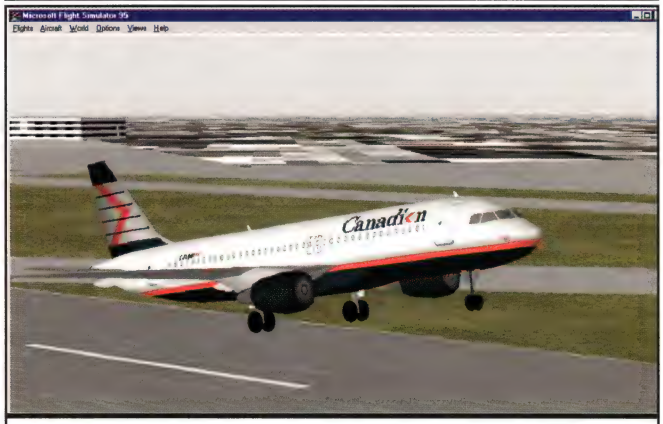


B7672JL1.ZIP - Tetsuji Konohira's beautiful Japan Air Lines Boeing 767.

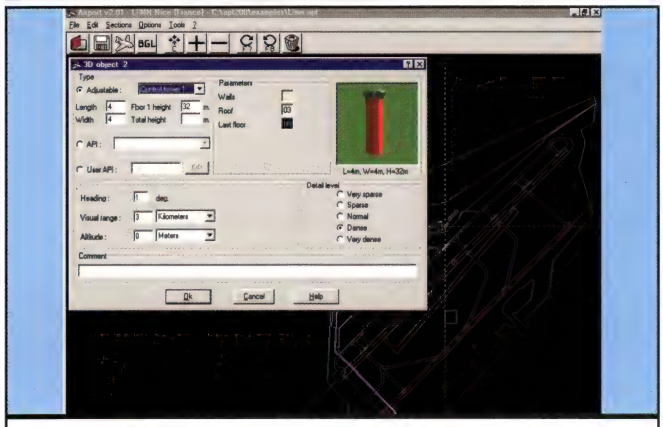


CANARISL.ZIP - Gran Canaria from the detailed Canary Is. scenery.

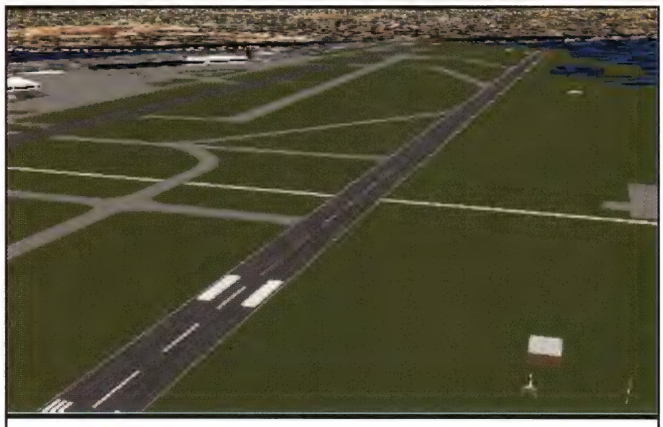
K4SD_V6.ZIP -Reno/Stead airport, site of the famous air races.



CANA320.ZIP - Canadian Airlines Airbus A320 lifts off.



APT200/201 -W95 Version of the popular scenery design program.



APT200/201 - Nice, France created with Airport V2.0.

B737SWAT.ZIP - Southwest's "Lone Star" departing MW's DFW.

WIDELEAR.ZIP - See all the flight information - all the time.

Review Of... ...IFR Approach Adventures

Playing on the Microsoft *Flight Simulator* motto – "As Real As It Gets" – SimuTech Corporation, a small company in Tampa, Florida, brands its *Flight Simulator* add-ons "even more real than it gets." This review discusses two of SimuTech's products, *IFR Approach Adventures* and *Full Flight Adventures*, both of which use the adventure generator in *Flight Simulator Flight Shop* and a large volume of wav files to enhance the *Flight Simulator* experience and provide realistic, digitized sound of controllers *and* other pilots. Properly performed, the adventures in *IFR Approach Adventures* and *Full Flight Adventures* do provide a high degree of realism with unprecedented ATC sound. Despite the company's motto, however, there are a few areas where simulation realism can still be enhanced.

IFR APPROACH ADVENTURES

IFR Approach Adventures creates numerous adventures (50 in Volume 1) that encompass solely the transition from the enroute environment to the approach environment and the subsequent approach and landing (and missed approach in some cases). These adventures provide highly-structured flights that will each last between seven and fifteen minutes. By limiting each adventure to an approach (as opposed to a full IFR flight), SimuTech is able to offer many, many approaches in one package. Because instrument approaches are one of the most challenging aspects of instrument flying, the *IFR Approach* package provides helpful, rapid-fire experience for the simulation pilot interested in improving instrument flying skills.

After a hassle-free installation (performed within *Windows*), the new adventures reside within the *Flight Simulator* directory and are accessed from its menu structure in the same place as any other adventure generated by *Flight Shop* (Options/Adventure Factory). A handy reference card lists the adventure names and describes the instrument approach that each will provide. NOS instrument approach procedure charts for each approach are provided with the program on heavy paper stock. The *Flight Simulator* scenery for the approaches is provided by John Trindle's Instrument Scenery Set for two regions, which come bundled in the program.

Once selected, an adventure will begin with the Cessna 182RG headed for a navigation aid in level cruise flight. Weather is controlled by the adventure generator, as are navigation and communication frequencies. Within half a minute, the first taste of what a real air traffic controller sounds like crackles from the airplane's speaker. To get just the right sound, Tim and Jim used real-life air traffic controllers and pilots and recorded them using a proprietary recording technique to very accurately simulate the sound one hears over an airplane's communication radios. They also did their homework in developing the various scenarios to ensure that the routings selected and phraseology employed are highly accurate. In addition to realistic instructions issued to SimAir 28 Tango, the user's airplane – authentic communications between ATC and other aircraft (e.g., airliners, King Airs, Cheyennes) are also heard.

A typical scenario provides a couple of turns and a descent to the requisite altitude (e.g., glideslope intercept altitude when receiving radar vectors to the final approach course of an ILS approach) before approach clearance is issued. After the airplane is established on the final approach course, the approach controller instructs that the tower be contacted and the correct frequency is given. A different controller voice then clears SimAir 28 Tango to land on a particular runway and provides the wind and altimeter setting. During the landing roll, the local controller says something like, "turn off next taxiway, contact ground control on one two one point nine." Bar none, this is the best ATC sound and phraseology I've yet heard with *Flight Simulator*.

The scenarios available with *IFR Approach Adventures* are scripted. What this means is that, for a given adventure, the ATC communications will be the same every time they are flown. This differs from the experience with *Flight Shop* (or *WinPlanner3* used in conjunction with *Flight Shop*), where the program will vary the ATC instructions as a function of the airplane's position. Because the "sound bites" in *IFR Approach Adventures* are pre-recorded from a script, the program is unable to adjust the communications for variations in aircraft position. As a result, navigation must be accurately performed. If it is not, the scenario may simply not work and the approach course may not be intercepted. When performed correctly, however, these two programs look and sound great.

IFR Approach Adventures monitors certain aspects of aircraft performance and cautions against some errors. For example, if ATC instructs a turn to heading 3-1-0 and the aircraft does not begin the turn, a voice (not that of the air traffic controller) says, "Come to your assigned heading." Because of the lack of realism that such an instruction would indicate if it came from ATC, I told myself that it was my flight instructor scolding me for missing the turn. The same held true when my failure to quickly reach an assigned altitude resulted in that same nagging voice saying, "Come to your assigned altitude" or when I stayed at altitude after ATC assigned a new altitude and the voice said, "You should be changing altitude."

IFR Approach Adventures also has a rather basic method of error tracking. Each time I heard that voice I knew that one additional error has been logged. At the conclusion of a flight, after I contact ground control, I heard more about the quantity of my errors. First, a voice – different than my imaginary flight instructor – said. "Great job, get some rest." Then, in text on the screen, I was told how many errors were recorded. If I had zero or one errors, it said "Great job." Two errors got me a "Pretty good job." Three errors and I was told "You need some work." Thereafter, messages that explained why my family is lucky I fly a computer rather than an airplane crossed the screen. "You're lucky to be alive," Mr. Stern. Or the best one; just prior to impact a voice screamed "WHOOOOOOAH." Then, after the crash, another voice said, "Nice flying, Ace!"

The ATC sounds are great. The error tracking, however, I could do without. First of all, minor deviations (five degrees

of heading) are counted as an error. Second, some of the really dangerous errors can go undetected. On one ILS approach, I flew hundreds of feet below the glideslope without a report of any error. Tim Freriks assured me that altitudes are checked while making approaches, but it is possible to have substantial deviations in altitude that go unchecked depending on when and where they occur. I have mixed feelings about another feature: the program's provision of "tips," a limited form of flight instruction. Some of the tips are pretty good. For example, explaining the headings to fly during a procedure turn. Others, though, are poor. For example, the program instructs the user to "slide right" if the localizer needle is to the right of center.

IFR Approach Adventures offers scenarios with either "full" or radar vectored approaches. Full IFR approaches are used when radar is unavailable to provide vectors to the final approach course. In that situation, the pilot flies to a navigation aid, flies an outbound heading, uses a maneuver known as a procedure turn to get turned around (i.e., course reversal), and then flies the final approach to landing.

In addition to the great ATC sounds, *IFR Approach Adventures* provides ATC for many types of approaches, including ILS, NDB, VOR, VOR/DME, Localizer, and Localizer Back Course. The scenarios – with a few exceptions, are solid and realistic and, therefore, challenging at all levels of flight experience. Additional packages of IFR Approach Adventures are expected shortly.

FULL FLIGHT ADVENTURES

With the JFK to Boston *Full Flight Adventures*, the adventure begins with the Learjet 35 on the ground at John F. Kennedy International Airport, adjacent to runway 13L, and with a small map view on screen. A series of program options is offered in text at the bottom of the windscreen. Tips, clearances in text in addition to voice, automatic frequency settings, a shorter flight, a trip to Martha's Vineyard instead of Boston, and cruise at 7,000 feet instead of 13,000 feet are all offered. While not entirely clear, each option requires the press of a key within six seconds. You are then cautioned that the trip will be challenging and that you may want to try it in a slower airplane. From experience, I learned that the program is best suited for propeller-driven airplanes. At jet airplane speeds, the program occasionally will not keep up. Tim Freriks recommends cruise speeds of 180 knots or less, and at least one feature — randomized engine failure — works only with propeller driven aircraft.

For simulator pilots who like fast planes, a new package — *Jet Approaches* — is under development. This program will reportedly feature approaches to San Francisco, Los Angeles, San Diego, Chicago, West Palm Beach, Champaign, Illinois, Orlando, Washington, and Boston. Missed approaches and holding patterns will also be included in the simulation.

The initial communication in *Full Flight Adventures* is with the clearance delivery controller, who clears the flight, SimAir 28 Tango, to Boston via radar vectors Deer Park (DPK), Victor 16, after departure turn left heading 0-6-0, climb and maintain 5,000, expect "higher" five minutes after departure, squawk 4663. In text, the departure frequency of 126.8 is also provided. This same clearance is given every time the adventure is flown. Variations in routing through "amended clearances" do, however, occur on a ran-

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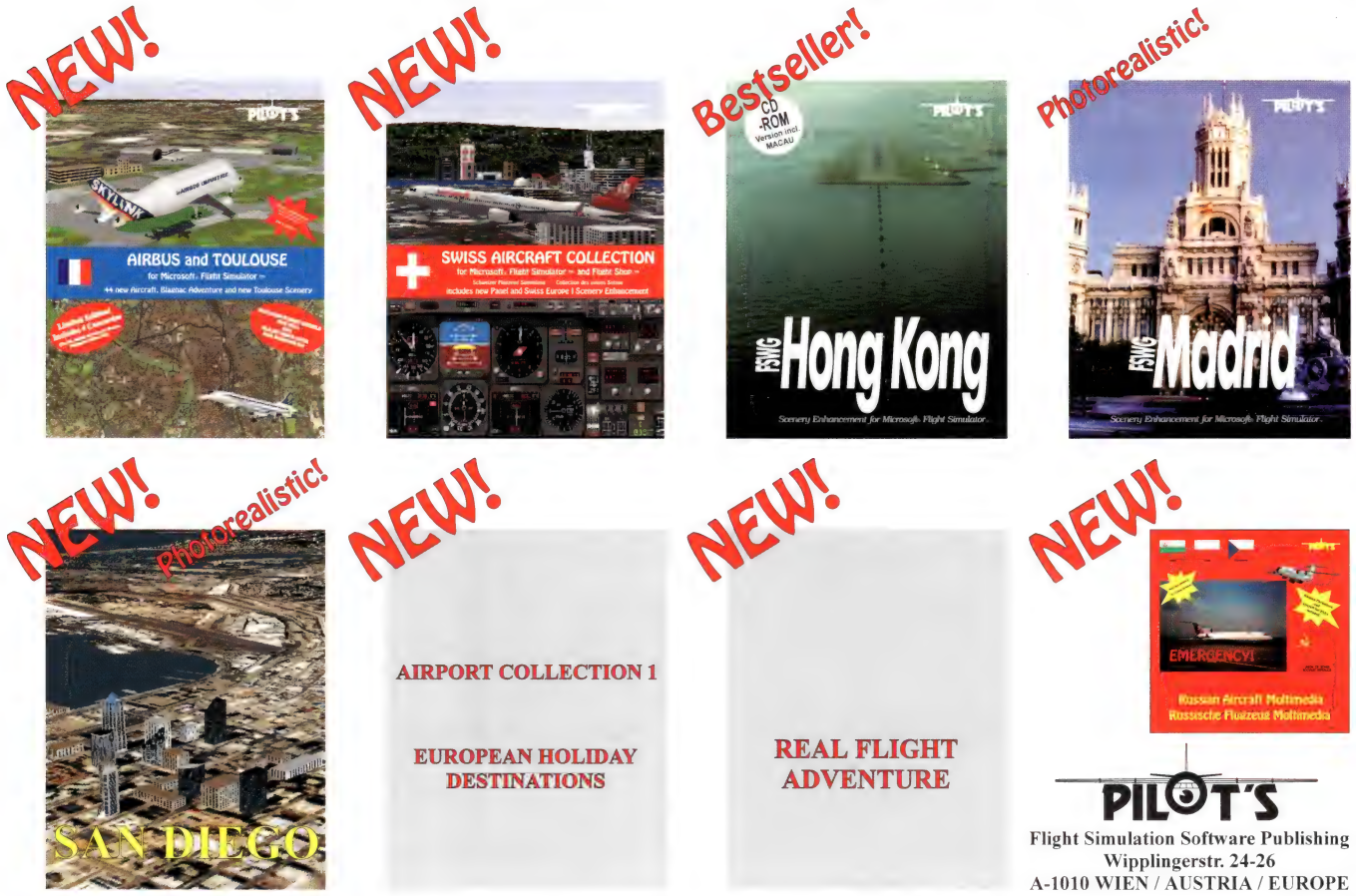
Products for Microsoft Flight Simulator V5.1 and Flight Simulator for Windows 95.



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Wipplingerstr. 24-26
A-1010 WIEN / AUSTRIA / EUROPE

VOICE: (+43 1) 535 90 10 FAX: (+43 1) 535 40 10 EMAIL: 100327.51@compuserve.com

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dom basis later in the flight, and occasional bad weather in Boston will require a deviation to Providence, Rhode Island, Hartford, Connecticut, or Martha's Vineyard, Massachusetts.

After taxiing to the runway, a different controller clears SimAir 28 Tango for takeoff. The female controller comes complete with a nagging Brooklyn accent; this is, after all, New York. On several of my flights, she instructed me to fly runway heading or cleared me for a turn to a different heading than the sixty degree heading provided with my clearance.

As with *IFR Approach Adventures*, the ATC sound is what makes this program. The controller instructions, as well as the background chatter with which this program is rich, are exceedingly realistic in both sound and phraseology. One exception with respect to phraseology is a background scenario where a jet aircraft pilot is concerned that he is having instrument problems and he changes altitude, leaving it to the radar controller to advise him when he has reached a certain altitude – not a likely scenario.

Once airborne, *Full Flight Adventures* directs SimAir 28 Tango along a variety of routes to Boston. Randomly-generated reroutes require navigation along a different path than that called for by the original clearance. As stated above, bad weather in Boston may require diversion to another airport, where a visual approach will be possible.

On my first arrival into the Boston area, I had a problem: localizer and glideslope flags on my navigation radio. It turned out that some early *Full Flight Adventures* packages did not include the requisite data for the Boston Logan approaches. That has now been remedied, and, according to Jim, all packages now include an additional disk for users who do not already have the Boston navigation aid data.

On subsequent flights, I received radar vectors to the final approach course for one of the ILS approaches to Logan or — weather permitting, a visual approach to one of the runways. After a good flight, I received nothing but accolades (Total Errors: 0, Heading Errors: 0, Altitude Errors: 0, — "you did very well"). On another flight where, due to my 500 knot cruise speed, ATC stopped keeping track of me, I purposefully descended from 13,000 feet and flew into the ground. Nothing was said to me the whole way down, but I received the same "Whooooooooa" just prior to impact and "Nice flying, Ace" after the crash. On yet another flight, I purposely flew at FL 240 rather than 13,000 feet. Numerous "altitude errors" were generated, and I was told after landing "Your piloting skills suck!" Tim later advised me that concerns over political correctness led SimuTech to remove that particular message from their product, but I took it in good stride.

For an added taste of realism on your next IFR flight, try SimuTech's *Full Flight Adventures* and *IFR Approach Adventures*. SimuTech can be reached at 813-933-0610. These products are also published by Apollo Software.

About the author - Jonathan Stern is counsel with Dombroff & Gilmore, P.C. in Washington, D.C.. He holds comm pilot, CFI, ground instructor, and control tower operator certificates. He is also the author of two books on Flight Sim: Microsoft Flight Simulator Handbook and Flying On Instruments With Flight Simulator. Jonathan can be reached on CompuServe at ID 73502,2437. [MW✈]

Preview Of... ...747 Precision Simulator

"*Glide-slope alive*," said the copilot, as the ILS system to Boston's Logan Airport, began to lead the 747-400 down the instrument generated path (ILS) to complete the flight from London's Gatwick airport.

"*Gear down, and Flaps to 20 degrees, please,*" ordered the Captain, as the glideslope centered precisely over the course deviation indicator. A rumble outside the aircraft from the disturbed airflow, as the nose gear door opened and allowed the gear to be lowered, was secondary to the indications on the glass cockpit panel as the 3 "greens" illuminated to ensure that the landing gear was in position to absorb the shock of 630,000 lbs. of airplane meeting the runway at 160 knots of groundspeed.

Figure 747.1 - CLIPPING, showing "Legs Page", and ND (Navigation Display) show us to be at 141 knots, 980 feet on the ILS, with winds-hear in the area. The CLIPPING screen shows that we had to manually extend the Flaps. On the EICAS (Engine Indicating and Crew Alerting System), the fact that the Flaps are displayed in an enhanced form means that they failed to extend in a normal manner.

The weather at Boston had been W0X0F all morning during Flight 400's crossing of the Atlantic, but now, had improved enough for a Cat IIIb approach to commence. This would be a total autolanding and during the roll-out, after touchdown, the auto-pilot would continue to keep the aircraft precisely on the centerline while also applying the brakes. The flight crew would see nothing out of their cockpit windows until the main gear had already touched down, and even then as the nose of the aircraft was lowered, by the autopilot to the runway, the crew would only be able to see 3 to 4 runway centerline lights in front of them while traveling at speeds in excess of 180 miles per hour.

The three autopilots continued to monitor each other. If any one autopilot exhibited a parameter or request from the Flight Management System (FMS) that was out of tolerance in its comparison, of the other two autopilots, it would be shunted out of the system to allow the approach to continue on the two remaining autopilots.

The cockpit was almost silent save for the gentle rush of the slipstream over the windscreen, the engine noise was minimal as the weight of the airplane, in descent on the ILS system was converting its mass into energy and airspeed. At 500 feet the First Officer announced the height and from that point on the sounds in the cockpit were only the audio generated sounds of the Flight Management Computers (FMC).

"*50 feet*" , "*40 feet*", "*30 feet*", "*20 feet*", "*10 feet*" audio pronouncements were heard in the headsets... and then a gentle nudge, felt in the "seat of the pants", of both pilots, told them that they were on the ground. The speed brake handle moved to the rearward on the thrust lever pedestal as the autopilot continued its labors. "*Flare*" had been enunciated on the autopilot information panel and when ROLLOUT appeared on Mode read-out panel the Captain raised all 4 reverse thrust levers up to their 12 o'clock position to enable the engines to direct their airflow forward. The Auto-brake system continued to apply brake pressure at Rate #3 and soon brought the aircraft to a safe and slower speed for exit from the runway. "*80 knots*", voiced the First Officer as the aircraft continued to slow, and as a taxiway leadoff came into the Captains peripheral view, the auto-pilot was disengaged and manual steering from the tiller handle on the left side of the cockpit was used to safely steer the 747-400 off of the active runway. It was so foggy that it was difficult to safely herd this "whale" to her assigned gate for parking... so I turned off my laptop and called it a day!

Figure 747.2 - Boston, flaps 20, gear down (full screen) showing an ILS approach to BOS. The ND(Navigation Display) is presenting an ILS depiction... rather than a Moving Map display.

The above flight, in real time, with very accurate flight parameters, and actual in-cockpit recordings of the sounds of the flight systems, through audio callouts, has been accurately captured and presented in the beta version of 747-400 PRECISION SIMULATOR (PS1) and was flown entirely in a

DOS mode under Win95 on my Micron P-133 laptop with a SoundBlaster 16 card. I am also running the beta version on an IBM Aptiva, a Micron P-200, a Zeos P-166, and a EPS P-90 laptop. In each of those setups the installation was a snap and after creating a "Shortcut" to the application while in Win95, a simple click with the mouse found my computers very closely resembling the "office" where I spend much of each month working for my airline.

I have been a fortunate member of the early alpha team for this project for almost 2 years, and just recently, Mr. Hardy Heinlin, of AeroWinx, has released the first beta of the project. It has been very exciting to watch and see the improvements coming forth as this simulator program continues toward final production.

It would be difficult and very time consuming to present, in textual form, all of the possibilities and actual systems management that are available in this simulation program. The included graphic presentations in this article ought to show you the depth and completeness of this simulation program. This is much more than a mere flight gaming system, as I can assure you that the airline pilots of the world that fly the airways in Boeing's real world 747-400s will use this system. They will load it up to maintain proficiency and for at home practice until their next long haul flight. I am also certain that more than just myself will boot up the 747-400 PRECISION SIMULATOR (PS1) for simple relaxation and a chance to play "what if" from time to time!

The simulator program is unique, in that almost as much work has been put into features

Figure 747.3 - Here we see now that the same CRT that was used previous for an ILS display is now in Map Display... showing waypoints and winds and speed and distances. All of this is in real time and *all* of the display is updated in coordination.

Figure 747.4 - La Paz, Bolivia, Terror! Here we have an approach to La Paz, elevation at 14,000 feet with an engine fire on the #3 engine and the ND showing Map Mode... while the out of the window display (upper left corner) shows the VFR conditions at the field.

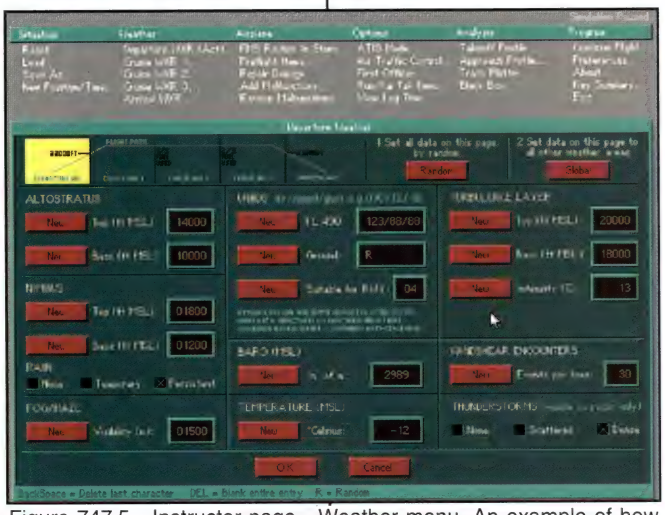

Figure 747.5 - Instructor page - Weather menu. An example of how the user can personalize his approach to any airport in the world with the 747-400 capable runway. Other selections can be made for numerous equipment/system faults in the Add Malfunctions area.

for an instructor, as they have for the pilots in the front seats. Almost any imaginable malfunction can be programmed in advance by the instructor and through a timing system the equipment/system malfunction will seem to occur at random. From the innocuous to the dramatic, all can be programmed without the pilot/students knowledge and caused to occur at just the most inopportune time! Until you have heard an actual autopilot disconnect, at 200 feet on the glideslope, and the associated sounds presented by the electronics in the real world airplane, you have not done justice to the amount of adrenaline your body can produce. Those same sounds and the same accompanying sweaty palms can be easily generated in 747-400 PRECISION SIMULATOR (PS1). I can testify that adrenaline works as well at home as it does on the line!

Navigation in the program is also very unique. For the first time an actual replication of a moving map display with real time great circle navigation is available. Programming the FMS is just as would be done in the real airplane and the initial alignment of the Inertial Reference Systems (IRS) is completely similar to actual practice. The aircraft computers need to know where they are before they can begin to compute where you want to go.

ATC sounds and TEXT BARS from START, ATC CLEARANCE, PUSH BACK, TAXI, TAKEOFF, DEPARTURE VECTORS ...to... ARRIVAL VECTORS, and LANDING are all presented through your computer audio system in a very realistic manner. The ATC controller is handling other airline flights and it is important for you to "listen up" and be

ready when she hands a new clearance to your flight.

This will be a computer program that will require the student, if not already a 747-400 pilot, to have available a very complete flight systems manual (included) for the situations that present you with a "cold and dark" airplane. Through the use of and presentation of the major and necessary panel subset views, on the actual aircraft, the simulator pilot must "awaken" the airplane and its electronics to prepare it for flight. The APU must be started, the battery must be enabled, the fuel pumps and fuel valves must be configured, the air-conditioning system and pneumatics must be setup for engine start, and finally the seat belt sign must be turned on before the last cabin door is closed. Oh, you should also turn off the No Smoking sign after the gear is safely stowed in the wheel well following takeoff. ☺

All of these systems and others are presented in graphic detail that very closely duplicate the same presentations on the real world aircraft. The route must be entered into the FMS, a destination must be entered and flight levels must be chosen. All during the keyboard entries the internal computers are considering your inputs and if you should happen to call/enter an altitude that is impossible for a given weight/distance configuration the computer system, in 747-400 PRECISION SIMULATOR (PS1), will not allow the entry.

I began my airline career almost 32 years ago and took many hours of instruction in the old Link Trainer systems. I am sure that many of you will remember the old "blue and yellow" boxy airplanes with the stubby little wings equipped with the pneumatic bellows that allowed the dip of a wing and a drop of the nose, all the while the mechanical "crab" crawled, outside of your little enclosed world in the "box", on the instructor's desk, as it left its ink markings on an area paper chart that was appropriate to that sessions assignment. We and the airlines then moved on to the Transydyne systems, and of course, now use full flight/movement simulators from Link, Singer, and BAE systems, etc. As each new simulator arrived at our airline, years ago, many pilots wished, as little boys for the space and funds available to purchase the old one... and to have it trucked to their basement den for play and practice on off time.

Those dreams can now come true for the 747-400 pilots of this world, and for the first time ANY pilot can fly a 747-400 in the comfort and safety of his/her home... but more importantly this time your wife or husband will not be able to raise the "space considerations" argument for the den or the basement.

Watch for further developments and announcements of this program and prepare to be absolutely stunned by its completeness. 747-PS1 will be produced by AeroWinx and will have a selling price of approx. $250 USD including a world-wide data base and pilot's handbook. It is expected to release in March.

About the author – Mel Ott is a 747-400 Captain for Northwest Airlines and has 32 yrs of experience flying the big birds. You can find Mel active on CompuServe's FSFORUM and he can be reached via email at 70263.53@compuserve.com. ***[MW✈]***

FLY TIPS

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with Jonathan Stern

STRIPTEASE

A two-pilot flight crew operates rather differently than a single pilot operation. While the single pilot makes all the decisions and carries them out, the two-pilot crew must divide in some manner both the authority and the work. A system that at one time gave absolute and unquestionable authority to one pilot and required unquestioning obedience by the other gave way to a method advanced by psychologists and human factors specialists: that of crew resource management, or CRM.

In the two-pilot context, one pilot manipulates the primary flight controls while the other provides support (e.g., communicating with air traffic control, reading checklists) and backs up the flying pilot. To prepare for flying an instrument approach, the applicable approach chart is reviewed by the non-flying pilot and the significant features of the approach are briefed. This process provides an opportunity to prepare the cockpit (including avionics) for the approach and to take note of other information needed for the approach.

Until now, the information necessary for the approach briefing had to be extracted from various sections of the instrument approach procedure chart. For example, the localizer frequency would be found on the plan view, the final approach course on the the profile view, and the decision height from the minima section.

As a result of research from organizations such as the Air Transport Association, Jeppesen, the Aircraft Owners and Pilots Association, and the Department of Transportation's Volpe National Transportation Systems Center, a new chart format was developed and is expected to be incorporated into Jeppesen charts and, at a later time, into NOS charts. The new format adds a "briefing strip," a section of the chart that provides all the information necessary to brief the approach. The briefing strip, according to *AOPA Pilot* (June 1996), was originally designed by M. Stephen Huntley, Jr., a research engineering psychologist at Volpe. Figure UTH.1 is a Jeppesen chart for the ILS Rwy 19R approach to

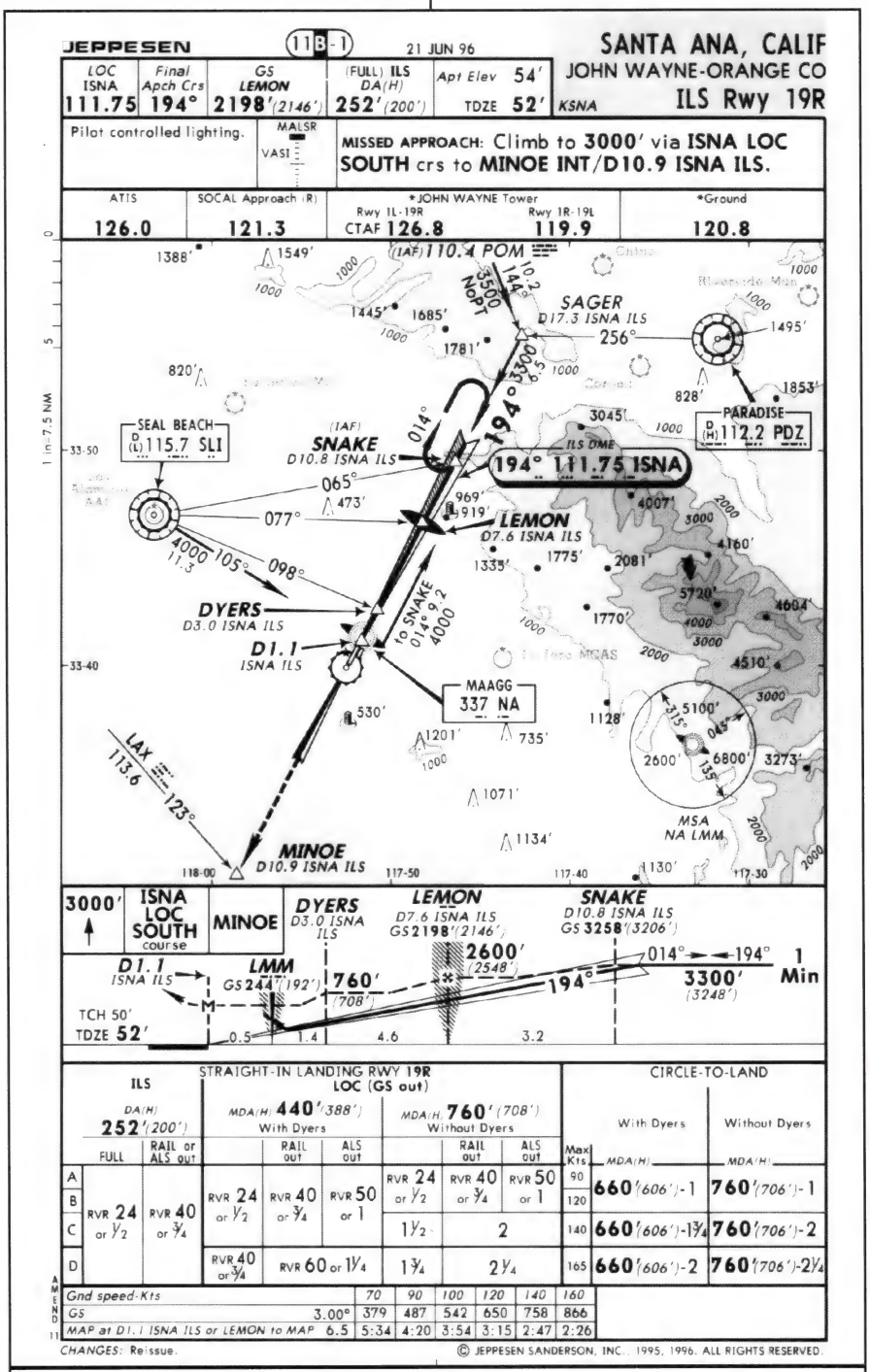

Figure UTH.1 - The ILS Rwy 19R chart for Santa Ana, CA, in the new briefing strip format. Reproduced with permission of Jeppesen Sanderson, Inc. Reduced for illustrative purposes.

Santa Ana, California, in the new briefing strip format.

The briefing strip provides the approach information in a format consistent with the approach briefing practices of most airlines. With the briefing strip, the non-flying pilot need not search the chart for all necessary information; it is in one place at the top of the chart. This, according to *Professional Pilot* magazine (April 1996), "incorporates a number of crew resource management and human factors elements."

Of course, the advantages of the briefing strip are not confined to airlines or other multi-pilot crews. The single pilot probably derives even greater benefit from having all of the approach information in one easy-to-find location on the chart. After all, he or she has even less time to be searching for information when preparing the cockpit for the approach.

Using the ILS Rwy 19R instrument approach procedure for John Wayne Airport (in Figure UTH.1), let's set up and fly an approach using the briefing strip. Take off from Van Nuys, California, and fly at or above 6,000 feet MSL to the Pomona VORTAC on frequency 110.4. I'm somewhat taken with the features of Peter Kruesi's new Boeing 737 panel, which was featured in MicroWINGS (version 4 number 3), and that's what I used to fly this trip. While approaching Pomona, use the briefing strip to prepare for the approach.

The first box in the briefing strip shows the localizer frequency as 111.75, which I set into my NAV1 receiver. The second box shows the final approach course as 194 degrees, and that is set using the omni bearing selector. In the third box is the glideslope altitude at the LEMON outer marker. The fourth box shows the decision height ("decision altitude" in Jeppesen parlance). In parentheses is the height above touchdown of 200 feet, which, on my 737 panel, is programmed into the radio altimeter. Figure UTH.2 shows the airplane approaching Pomona with the arrow pointing to the height above touchdown setting on the radio altimeter. The fifth box reflects both the airport elevation (54') and the touchdown zone elevation (52'), which is the highest elevation at the centerline along the first 3,000 feet of the runway served by the approach.

Figure UTH.2 - Approaching Pomona Airport.

Figure UTH.3 - Over the LEMON outer marker.

Figure UTH.4 - Passing over the MAGG middle marker.

The next line contains a box with notes, in this case one about the presence of pilot-controlled lighting, the type of lighting systems serving the runway to which the approach is made, and the details of the missed approach procedure. An abbreviated, icon-based missed approach procedure is also displayed in the profile view. The bottom line of the briefing strip shows the communications frequencies that will be used during the approach, landing, and taxi in the order they will be used. Figure UTH.3 shows the airplane over the LEMON outer marker with the arrow pointing to the stopwatch, which is used to time the approach in the event of glideslope failure. Figure UTH.4 shows the airplane at the MAGG locator middle marker, about to touchdown.

The briefing strip, though just a tease at this point, should prove to be a welcome addition to instrument approach charts.

PUTTING THE BEST SPIN ON YOUR APPROACH

To the list of sources of approach

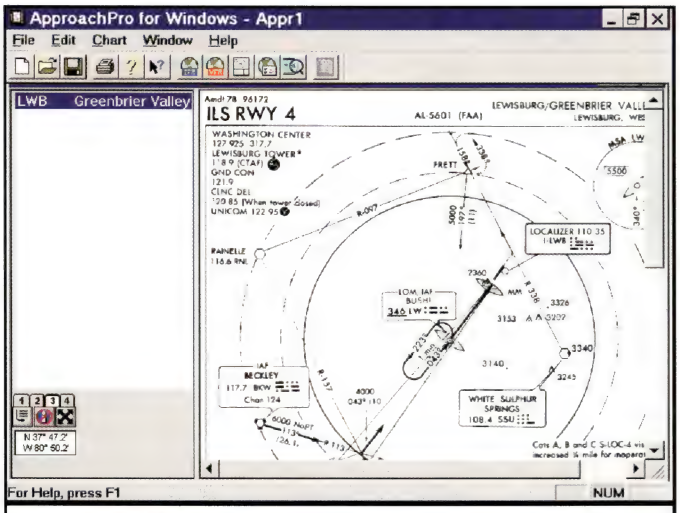

Figure UTH.5 - MentorPlus' Approach Pro for Windows.

charts for flight simmers (which includes printed charts from NOS and Jeppesen and the *Final Approach* program), add two (well, maybe two as I'll explain below) recent product introductions in CD-ROM format. MentorPlus came to market first with their *ApproachPro for Windows*, scanned NOS IAP charts on CD-ROM (three CDs for entire U.S. coverage). Rather than carry loose-leaf manuals brimming with paper charts, *ApproachPro* provides printed charts on demand or displayed in the cockpit on a notebook computer. The CDs are replaced by mail every 56 days. Figure UTH.5 shows a chart being displayed on *ApproachPro*. I found the interface, which includes some very limited flight planning features, somewhat cumbersome, and it was occasionally difficult to find the desired approach chart.

MicroWINGS commercial member Jeppesen Sanderson was next to market with their *JeppView* CD-ROM product, which provides all U.S. Jeppesen approach charts, SIDS, STARS, chart NOTAM's, and airport information on a single CD. The key to fitting it all on one CD rather than three is Jeppesen's use of vector-based graphics rather than scanned images. This production methodology also results in a cleaner display and sharper print output than the MentorPlus product. Charts print in an 8½ X 11" format. The charts are in multiple colors and a fresh CD is sent every two weeks. Jeppesen currently recommends that charts be printed for use in the cockpit, because they have not yet identified a display device they deem acceptable for cockpit use. There are a number of easy-to-use printing options.

Interestingly, Jeppesen announced at Oshkosh that it had acquired MentorPlus, making it doubtful that the *ApproachPro* product will celebrate more than one birthday. To flight simmers and "real world" pilots alike, however, it should be recognized that Jeppesen Sanderson has an exciting product line. In addition to the World's most widely used aviation navigation charts, the lineup includes leading text, video, and computer-based flight training materials, the highly-acclaimed FS-200 PC-based flight simulator, flight-planning software, pilot logbook software, moving map software, weather reporting services, and more. Jeppesen Sanderson has done an excellent job of maintaining its core business product while demonstrating the flexibility to respond to and grow with the World market.

I should point out – as a postscript — that, as a young flight instructor at Embry-Riddle Aeronautical University in 1980, I proposed and received funding to develop a program of interactive video ground training for pilots. Several months later, when we had only two videos in the can, Jeppesen Sanderson came to market with its first video training series. With no chance of competing on a cost basis, my program was shelved.

About the author - Jonathan Stern is counsel with Dombroff & Gilmore, P.C. in Washington, D.C.. He holds comm pilot, CFI, ground instructor, and control tower operator certificates. He is also the author of two books on Flight Sim: Microsoft Flight Simulator Handbook and Flying On Instruments With Flight Simulator. Jonathan can be reached on CompuServe at ID 73502,2437. [MW✈]

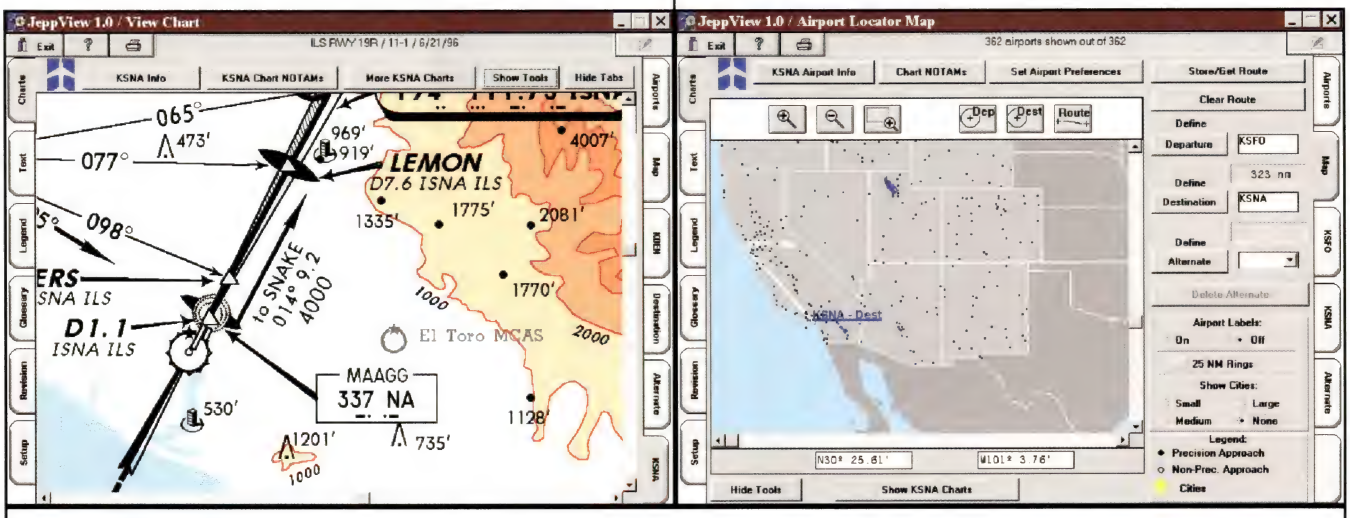

Figure UTH.6 - Jeppesen's JeppView software (to the left - a color Approach chart, to the right - a map of our flight path.

Ask Dr. Sim

Q - I have installed the Flight Shop Converter (FSCONV.EXE), but whenever I convert any aircraft or adventures, they never show up in the FS95 menus. What am I doing wrong?

A - For some reason, the converter could not find your installation of FS95. The way to correct this is to re-install FS95 (so the windows registry is correctly updated with where FS95 is installed) and then immediately re-install the converter. If you are still having a problem afterwards, then be sure when you are re-installing FS95 - that you are installing from the Control Panel's Add/Remove Software option.

Q - My aircraft won't convert correctly, I don't get an instrument panel.

A - In many cases, you need to place FS5 flight shop (FSFS) aircraft into a different folder than FS95. Then, let the converter do its job of placing the aircraft in FS95's folders. To do this, create a folder off the root (the top level directory of your hard drive) and call it FS5. Within this folder, create two more folders... one called PILOTS and another called TEXTURE. When you install FS5 FSFS aircraft, place the .AIR file in the PILOTS folder and all the other files (texture files) in the TEXTURE folder. When you run the converter, point to the FS5\PILOTS folder to find the aircraft. When you select them and convert them, the converter will automatically place the converted files in your corresponding FS95 folders so you can select them from within the FS95 menus.

Q - I recently installed some additional scenery from various online services, and everything seemed okay until I suddenly started getting Kernel32 error messages when trying to run Flight Sim 95. What is happening?

A - There are several opinions out on this error message.

1) Some say that it is a video problem and that adjusting the Graphics Acceleration setting (in the Control Panel-System-Performance-Graphics option) all the way to the left will cure it.

2) Others say that the problem lies in the World.VIS file - in that somehow the addition of the 3rd party scenery is corrupting the VIS file entries. The remedy if this is indeed the cause, is to reinstall FS95 to get a 'clean' World.VIS file. Then, after you install a scenery package, make a back up of the World.VIS file with a unique name so you can know what scenery file you installed in relation to the version of the World.VIS file. If you ever get another Kernel32 error, just revert back to the last working backup of the World.VIS file you made.

3) Still another camp says that the problem may be due somehow to the ordering of BGL files and scenery folders. Using a directory sorting utility to change the physical order of the files can correct the problem for some. I suggest that you try each of the above options one at a time until you find (hopefully!) which one will cure your version of the Kernel32 error malady. ***[MW✈]***

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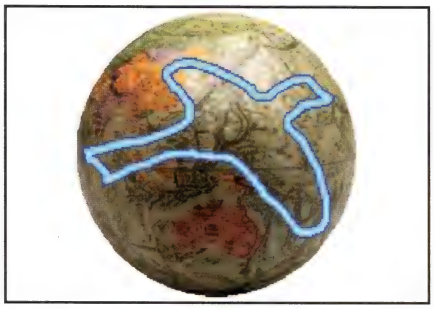

Virtual Round Robins

The term Round Robin is used by many aircrews to describe a flight route that completes a circuit (ends where it begins). Normally, a practice approach is flown at each airfield on the route.

by Al Pelletier

This RR takes place in the State of Florida and was flown with Microsoft FS95. But, it can be flown with any Flight Sim that has the required airports and navaids. The RR's use "real" world Navigation. This RR is the first done with Flight Simulator for Windows95, and a first try at the NavAids offered in it. I found the ILS's a bit off from the published and actual courses, but only by a slight margin. I know you will enjoy the "offset" approach at Key West, along with some fantastic scenery.

Orlando Intl		96	N 28° 25.6'	161T	104.0 nm
	121.25		W 81° 18.7'	165M	
PAHOKEE	PHK	20	N 26° 47.0'	166T	50.7 nm
VORTAC	115.40		W 80° 41.5'	169M	104.0 nm
MIAMI	MIA	10	N 25° 57.8'	138T	13.7 nm
VORTAC	115.90		W 80° 27.6'	142M	154.7 nm
Miami Intl.		11	N 25° 47.6'	196T	19.0 nm
	119.15		W 80° 17.5'	199M	168.5 nm
Homestead AFB		7	N 25° 29.3'	235T	94.1 nm
			W 80° 23.1'	238M	187.5 nm
KEY WEST	EYW	10	N 24° 35.1'	009T	136.3 nm
VORTAC	113.50		W 81° 48.0'	011M	281.5 nm
LA BELLE	LBV	30	N 26° 49.7'	003T	38.0 nm
VORTAC	110.40		W 81° 23.5'	006M	417.9 nm
SEBRING	SEF	118	N 27° 27.6'	355T	49.9 nm
NDB	382		W 81° 21.0'	358M	455.9 nm
KISSIMMEE	ISM	82	N 28° 17.4'	038T	10.5 nm
NDB	329		W 81° 26.1'	041M	505.8 nm
Orlando Intl		96	N 28° 25.6'		
	121.25		W 81° 18.7'		516.3 nm

Figure RR.1 - Our Flight Plan for this round robin, using NavAid v1.2.

SCENERY

Microsoft Default FS95 and MW_RR04.BGL (optional) by Eric Mitchell. This file adds the TACAN at Homestead AFB, and is available for downloading at the WWW.MICROWINGS.COM web site and at the WINGS.ARK.COM ftp site. Note that the Homestead TACAN is optional for this RR — a visual approach is available in lieu of the TACAN one. If you did previous RR's, skip the next paragraph, jump right in, and have fun.

For those who are new to this, Round Robins are published with the intent of having Flight-Simmers fly, look at the scenery, refresh our Geography, practice our cross country navigation , do some approaches at different airports all over the world, and have some FUN. In the messages, you will be getting info like: airport departure and runway number , VOR's and ADF's en route, two or three middle airport destinations for VFR or INSTRUMENT approach, and back to your point of departure (round robin) for an INSTRUMENT or VFR approach, along with ILS and LOM freqs, minimums, procedures etc. ..... You will also get info on the scenery needed to complete the flight and where to get it. Also, who created the scenery and a little background on the geography of the area. May I also suggest, that you READ the route a couple of times before starting out, so that you'll have the flight plan fairly clear in your mind.

Figure RR.2 - Approaching Miami International's runway 12.

Orlando ➢ Miami ➢ Homestead ➢ Key West ➢ Orlando

First Leg

Orlando Int'l ➢ Miami Int'l
approx. dist. 154 NM

- Clock 1400
- Under airports, select Cape Canaveral, and Orlando RWY 35.
- Taxi (or slew) to RWY07.
- Dial in the Pahokee (PHK) VOR 115.40.
- T/O Right climbing to 19,000 MSL, heading 161. (You should get reception on the PHK VOR about 25 NM's out).Track PHK to on top.

Figure RR.3 - Approaching Key West NAS' runway 07.

- On top PHK, dial in and track the MIAMI (MIA) VOR 115.9 and begin descent to 5,000. At this point you can also dial in the LOC I-GEM 108.9 in preparation for an ILS to RWY 12 (actual course 122, elev11).
- 10 NM from MIA, reduce to approach speed and continue descent to 3500. Over MIA, continue on heading and intercept the LOC.
- 5 NM back, you are cleared for a full stop RWY 12. Check Gear.
- LAND MIAMI

Second Leg
MIAMI ➢ HOMESTEAD AFB
approx. dist. 19 NM

- Clock 1530
- Dial in the Homestead (HST) TACAN 108.20 on NAV 1 and set 229 on your NAV1 OBI (optional. A visual approach can be carried out).
- Taxi back to RWY12 .
- T/O, climb RWY heading to 2,500, then turn right heading 180. Keep an eye on your OBI, and standby to turn right and fly a TACAN approach to RWY 23 (actual course 229 elev. 7).
- 5 NM back, you are cleared for a full stop to RWY 23. CHECK GEAR. (If you are opting for the visual approach, after take off from Miami, climb to 2,000 and turn right heading 200. You will find Homestead ahead at approx. 19 NM).

Third Leg
Homestead AFB ➢ Key West NAS (Boca Chica FLD)
approx. dist. 94 NM

- Clock 1630
- Dial in the Keywest (EYW) VORTAC 113.50 on Nav 1
- Taxi to and T/O RWY 23. Climb to 14,000 and maintain runway heading until reception on the EYW VORTAC (approx. 25 NM out of Homestead).
- 35 NM out of EYW, begin descent to 3,000. Over fly the VOR at approach speed. On top EYW, turn right heading 295 and set 098 on your NAV1 OBI.
- Maintain 295 until 8 NM past EYW, then turn left heading 130 and descent to 2,000. Keep an eye on your OBI.

NOTE: The procedure is to over fly the VORTAC on a heading of 098 and maintain 098 until visual with RWY 07. This is an offset approach. It will "not" line you up with the runway. You will have to line up with the runway once Visual.

- 5nm back, you are cleared for a full stop to RWY 07. Check Gear.
- LAND Key West NAS.

Fourth Leg
Key West ➢ Orlando
approx. dist. 233 NM

- Clock (depart Key West at dusk. Time will vary according to current season). Dial in the LaBelle (LBV) Vortac

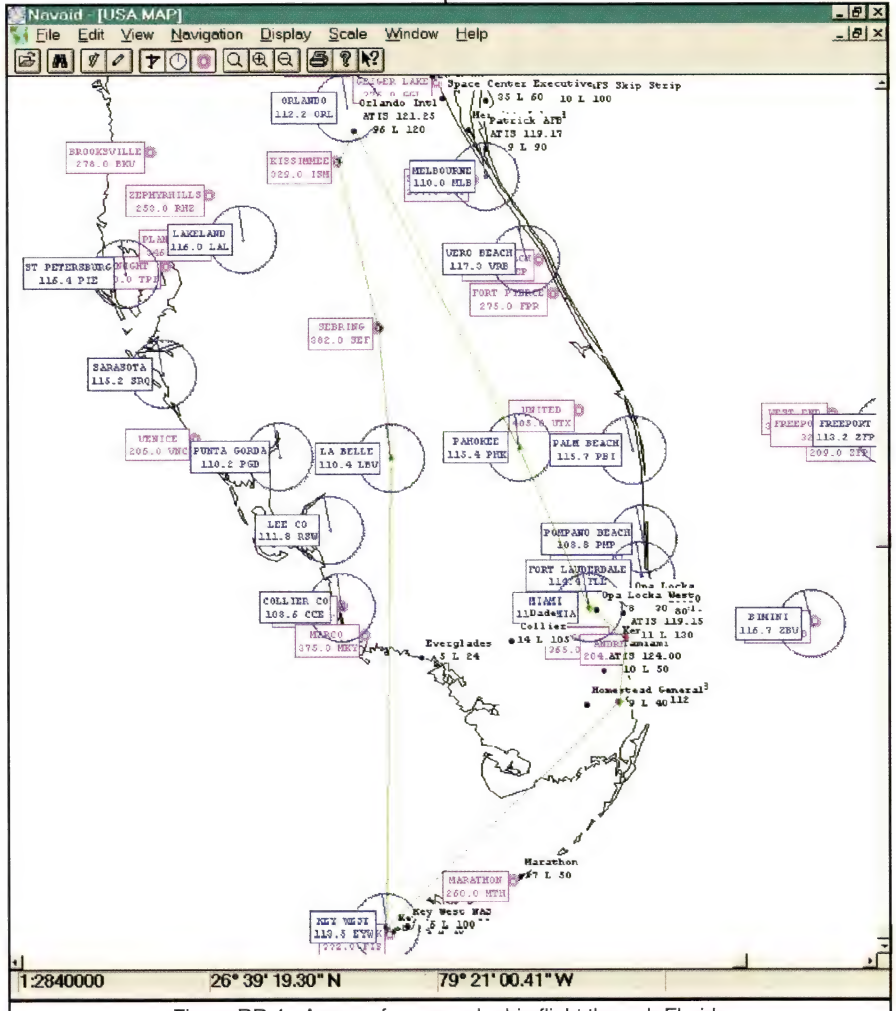

Figure RR.4 - A map of our round robin flight through Florida

110.40 and the Sebring (SEF) NDB 382.

- Taxi to and T/O RWY 07, left climbing to 21,000, heading 005. until reception on the LBV VOR (which should happen about 70 NM out of Key West).

NOTE: You can leave the Key West VOR on one of the NAV radios, for back bearing should you need it.

- Track the LBV to on top.
- Over the LBV VOR, Home the SEF NDB to on top. Enroute to SEF, dial in the Orlando (ORL) VOR freq 112.2. and the LOC (I.TFE) 111.9 on NAV 1. in preparation for an ILS to RWY 18R at Orlando (actual course 182, elev. 96).
- Over SEF, turn and track the ORL VOR.
- 30 NM out of the ORL VOR, begin descent to 7,000. On top ORL, continue descent to 3,500, and turn to heading 035 for 5nm.. Reduce to approach speed. Continue heading 035 for 5 NM passed the ORL, and then turn left heading 210 and intercept the LOC.
- 5 NM back, you are cleared for a full stop to RWY 18R. Check Gear.
- LAND ORLANDO
- WELCOME HOME

GEOGRAPHY

Florida, a favorite destination of millions of tourists, is a fast-developing state of the southeastern United States. Mostly a peninsula, Florida is bordered by Alabama and Georgia on the north, the Atlantic Ocean on the east, the Straits of Florida on the south, and the Gulf of Mexico and Alabama on the west. The first European to visit the region was the Spanish explorer Juan PONCE DE LEON in 1513, who called it Florida ("feast of flowers"), either because he saw a profusion of flowers on its coast or because it was Easter week (Pascua florida). The first permanent European settlement in the continental United States was at SAINT AUGUSTINE in 1565.

Florida is low-lying and level, with an average elevation of about 30 m (100 ft). The highest point, in Walton County in the northwest, is 105 m (345 ft) above sea level. Florida has 2,172 km (1,350 mi.) of coastline, more than any other state except Alaska; 933 km (580 mi.) of the coastline border the Atlantic, and 1,239 km (770 mi.) border the Gulf of Mexico. The uneven coastline is indented with estuaries, bays, inlets, lagoons, and rivers. The FLORIDA KEYS, an arc of islands—mostly either uplifted coral reefs or limestone shoals—lie off the state's southern tip.

1 - Thank you to Chris Squire for test flying the route. Thanks also to Peter Jacobson for the program "NAVAID11" which I used for Flight Plans, and maps.

2 - I flew a B747 on this trip, but any other A/C will do.

3 - For the experienced flyers, please be patient through all of the explanations, directions and extras. I direct this at newcomers to the flying world. I must stick to plain language.

Have Fun! Watch for upcoming RR in the regions of Canada and Australia.

About the author - Al Pelletier served in the RCAF for 25 years, as aircrew on Maritime Patrol airplanes. Al has been flying Flight Sims since the mid 80's with MSFS V2.0 and is a member of the Comox Valley Stopover Flyers. Al can be reached via Internet email at apeltier@mars.ark.com. [MW✈]

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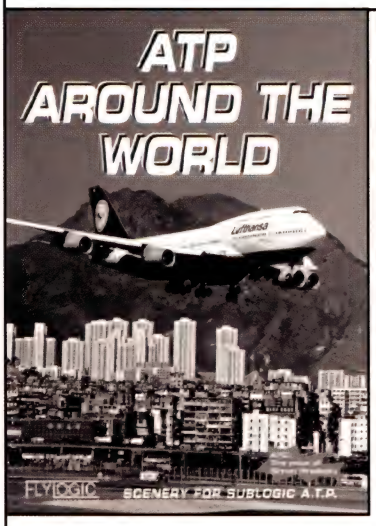

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World Flight 1997

Retracing Amelia Earhart's Flight

Flight Shop model of Amelia Earhart's Lockheed Model 10 Electra

by Gene Lacey
Datawings

This year, 1997, marks two anniversaries of historical aviation events. Seventy years ago in 1927, Charles Lindbergh astounded the world with his history making non-stop trans-Atlantic flight from New York to Paris. Sixty years ago in 1937, Amelia Earhart attempted an equally astounding feat with her around the world flight that originated in Oakland, California but ended mysteriously, and presumed tragically, in the waters of the southern Pacific Ocean near Howland Island.

Perhaps in 1997, Earhart's history will have a chance to repeat itself, but with an anticipated successful flight conclusion. Linda Finch, a noted aviatrix and member of the famous Confederate Air Force based out of Midland, Texas, plans to retrace Earhart's ill-fated flight in March of this year. The Confederate Air Force is a unique group of dedicated volunteers like Finch specializing in the restoration of vintage aircraft and returning them to their original airworthy condition.

In 1927, Lindbergh piloted a specially designed single engine Ryan NYP monoplane during his history making flight while in 1937 Earhart flew her mission in a twin engine Lockheed Model 10 Electra. Her Model 10 was powered by two 550 hp Pratt and Whitney S3H1-1340 Wasp engines with Hamilton Standard constant speed props and was modified with a 1,202 gallon (7,813 lbs.) fuel capacity which could extend flight duration between stops to 24 hours! For her World Flight 1997, Finch will be piloting her restored Model 10 Electra which has been detailed down to a patch in the fuselage covering a mistake made during assembly of Amelia's Model 10. Finch's restored aircraft is among only two known examples of the Model 10 still registered today.

World Flight 1997 began more than three years ago when Finch envisioned a Model 10 restoration project to commemorate Earhart's attempt to circumnavigate the globe in 1937. She purchased her Model 10 as a "bucket of bolts" from a collector in Wisconsin for $330,000 and began looking for a commercial sponsor. Pratt and Whitney joined as such for the project and agreed to pay costs for the Model 10 restoration as well as expenses for the trip and associated educational programs. Finch and the aircraft are based at San Antonio International Airport in Texas where she headquarters a nursing home business. At publication time, information on World Flight 1997 was available on line at www.pratt-whitney.com/history/amelia.html while a new page is planned to follow the progress of the flight. A Flight Shop model of Earhart's Model 10 for FS5+ or FS6.0 is commercially available in TekMate's Hangar 27 "Air Museum" linked through the MicroWINGS Other Cool Webs page at http://www.microwings.com.

During World Flight 1997, Finch will be covering approximately 29,000 miles while crossing five continents requiring 30 stops in 20 different countries over a three month adventure. Like Earhart, she will be cruising at approximately 150 mph at an altitude not exceeding 12,500 feet while enduring cabin temperatures up to 120 degrees. Weather elements will offer similar challenges as they did in 1937 requiring her vigilance in thunderstorm avoidance and enroute forecast updates. Unlike Earhart, however, Finch will indeed employ the art of today's GPS navigation which will certainly make Howland Island much easier to locate. In 1937, Earhart's last radio transmission indicated she was within 50 miles of Howland Island, low on fuel and her destination not in sight. While such a predicament may be understandable in the year 1937, modern navigational technologies certainly offer an edge for Finch's success in 1997.

Many aviation enthusiasts will be following Finch's flight on line while many others will be concurrently simulating the flight in FS5+ and FS6.0. Certainly everyone will be sending their best wishes and hopes for a safe return and inspiring flight. Finch plans to drop a wreath in memory of Earhart over Howland Island as she continues towards her anticipated successful conclusion World Flight 1997.

About the Author: Gene Lacy is a private pilot and a member of TekMate's Virtual Skunks team, designer of FS4, FS5+, and FS6.0 aircraft and has been an active contributor to the FS community since 1991 as owner and operator of DataWings. ***[MW✈]***

The Story of Speedbird 9's Flight from London to Atlanta

It was Friday evening. It was late, the day was almost gone and I was in a real mess. I'd spent most of the day planning and after all my work, I still had questions nagging at me. Had I got all my flight planning finished? Would the navigation get me there? Had I got all the right charts? What about my fuel figures? Where was the calculator? Where's the wife and the tea? Sweetheart?

This was the evening before the big event. Tomorrow, I would be taking my simulated Jumbo Jet across the Atlantic to join dozens of other armchair airmen (and women) for the second major on-line shindig of the year, this day would go down in the annuls of simulation history when the elite few, in the flight simulation world, would be extending their landing gear to meet the smooth tarmac of William B. Hartsfield International Airport in Atlanta, Georgia, USA. CompuServe's FSForum Fly-in 12 was almost upon us.

Preparations

I had spent most of the previous week preparing for this extravaganza. Speedbird 9 Delta Victor (my simulated British Airways Boeing 747-400 airliner) had practiced the Standard Terminal Arrival Route entry into Atlanta's Hartsfield International Airport dozens of times, together with routine landings on each of its four runways. Additionally, just to be on the safe side, I'd spent a lot of time doing missed approaches and holding patterns around my home base of London Heathrow on the assumption that the principle of Murphy's Law would always apply — what ever could go wrong most certainly would. I don't know why, but I had a sneaking suspicion that this trip was not going to be as easy as the previous Fly-in 11 to Las Vegas had been earlier in the year. On that occasion, I flew 11 hours and 7 minutes culminating in a nice landing on the shorter of Las Vegas McCarren's 2 main runways. This time, I would be flying for just under 9 hours but something told me this flight would be different.

I had checked out my Dual Player Mode capability (of FS5.1) about a week before the event, with a friend of mine, Brian Rumsey who lived just down the road in Bristol. Brian was one of three European based Tower Controllers earmarked for Fly-in 12, the other two being in Germany. These guys would get us down when we reached Atlanta, all being well. Then I heard that Brian had pulled out of the event due to personal circumstances. This meant that I would be trying to connect with a German Tower when the time came for landing... ah well!

Departure

It was late when Speedbird 9 Delta Victor finally pushed back from the southern end of Terminal Four at London Heathrow (much later than planned). I was actually about 25 minutes behind schedule when I taxied the 747-400 west along the southern dual taxiway to the 09R runway holding point. I was using John Waller's excellent England1 scenery which adds great detail and realism to London's main international airport. The weather was quite good for this time of year with Air Traffic Control reporting nothing very significant along my planned route. I could hear the Tower Controller's voice pretending to invade my head...

"Speedbird 9 Delta Victor, line up and hold runway 09 right..."

I guided the big Jet onto the runway and straddled the centerline, gazing after an imaginary Air France Airbus that was gently lifting into the air further down the concrete.

"Speedbird 9 Delta Victor, your cleared for takeoff runway 09 right... surface wind one one zero at ten knots..."

I was using Doug Strackner's wonderful 747-400 flight panel for this trip and, switching to the engine instrument readouts, I slowly ran the throttles up to 40 percent. Cycling the panel again, I checked the EGT's and N1's on both displays to make sure the engines were powering up together. Releasing the brakes, I gave her full power and we were off down the runway.

My initial departure routing took me in a long climbing right turn, initially to the south then right around to the west, climbing through 4,000 feet towards the Woodley NDB, just west of Heathrow before tracking north-west towards the Compton VOR and climbing through 6,000 feet. Then it was onwards and upwards towards Ireland, climbing initially to 31,000 feet for the first part of the flight.

The takeoff went well with the jet quickly gaining airspeed and altitude as I flew the Compton Standard Instrument Departure manually, getting lovely views below the aircraft as we climbed away westwards. From now on it was time to concentrate on getting up to cruise altitude as efficiently as possible and keeping an eye on my navigation. Since I would be spending about 9 hours here in my virtual cockpit (Flyin rules state that all flying must be done in real-time, not accelerated or speeded up in any way) it was important to keep the navigation accurate. For that reason, I kept a pen, a calculator and my trusty notation sheets very close at hand (and I had to make sure that the tea kept coming on regular basis).

Emergency!

It was not very much later that Speedbird was cruising at 31,000 feet, about 100 miles west of Cork in Ireland, when it happened... I had no warning at all and to this day I cannot account for what happened. For me, it was just pure luck that I happened to be doing a routine scan of the engine displays at the time.

With a sandwich in my left hand and the Atlantic Chart in my right, the 747-400 was calmly tracking westwards when the port outer engine just stopped. At the same time, the autopilot, upon which just the ALT and HDG HOLD functions were enabled, disengaged itself. Almost immediately the aircraft began to pitch downward and yaw towards the dead engine. I dropped the chart and the sandwich thankfully missed my trousers and instead hit the floor. My mind began reeling and I didn't believe all this was happening in front of me. I quickly recovered my composure and scanned the instruments, making absolutely sure I had correctly identified the stopped engine. Air Accident Investigations are littered with statements like "... the cause of the crash was attributed to the crew incorrectly identifying the malfunctioning engine and taking the wrong action resulting in..." and so on. I didn't want to become another virtual statistic.

It took me about three minutes to counteract the port yaw and stabilize the aircraft before re-starting the fuel flow and attempting to re-light the crippled engine. Luckily it ignited the first time with no evidence of a hot start and I gradually brought the power back and some seven minutes later had regained most of the lost altitude. After making certain that everything was settled, I re-engaged the autopilot and watched it like a hawk for the next hour or so for any sign of trouble.

Those few minutes had seemed like a lifetime! My flight situation could so easily

have deteriorated and we could have gone down in the Atlantic with all hands. I congratulated myself on a lucky escape and tried to resurrect the remains of my sandwich from the carpet.

Arrival

The on-board clock showed 3:40 in the afternoon, local time when Speedbird 9 Delta Victor finally arrived over Atlanta having been vectored in for an approach to runway 09R. In the end, I just was 11 minutes late on my estimate, my arrival slot being 20:30 - 20:40 Zulu. Despite a difficult Atlantic crossing, I had made up some time after the 25 minute delay at Heathrow and we were almost there with just the landing to come.

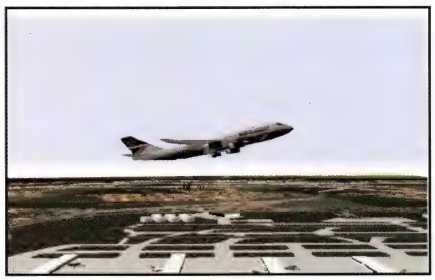
Reaching the contact point, I made the call to Approach Control. Young Uwe Hinkel came on the line and with excellent English and gave me the number of a Tower to contact. Lining up the 747 on the ILS beam, I called up the Tower using my modem. After the connection was made, I got to six miles from the threshold before the line went dead and the message "Lost Connection" appeared on the screen above my view window. I quickly hit full thrust and raised the landing gear, setting up for a missed approach. Climbing away, I brought the jet round for another go and a few minutes later called up the Tower. On this occasion, I got within 4 miles of the runway before the connection went down again! For the second time, I initiated a go-around and called Approach to try to arrange contact with the second Tower. Uwe calmly obliged, coming back with another number and I came in for a third attempt. This time I actually got the message "welcome to Atlanta" before the link was lost for the third time and I was climbing away again. Things were getting desperate now. Surprisingly perhaps, I'd had the foresight to upload extra fuel for just such a situation as this... it seemed that Murphy was indeed at work today.

I decided to try something different. I took Speedbird 15 miles south of the airport, to the SCARR Intersection where I flew a holding pattern of 2-minute turns, while I got back into the FSForum Conference area to try and get help. Thankfully, Jeff Hurst, one of the event staff came to my rescue and put me in touch with Bob Keating, a US Approach Controller. Bob's cool, calm voice made light of the fact that I was in a pretty desperate situation here but he was the ultimate professional and quickly gave me another Tower to contact, this time in the US. Rolling Speedbird out of the Hold, I carefully brought the airliner around for her fourth attempt to get down and at 9 miles, I called the new Tower.

Speedbird 9 takes off, bound for Atlanta.

Terror in the skies! Note the warnings re: Auto Pilot, EGT, and N1 Port/Outer engine!

Lost connection... executing go-around!



Lost connection... executing go-around, again!

Finally... Speedbird 9 is on final!

Turning off the active rwy, welcome to ATL!

Success

Speedbird was doing 175 knots with flaps at 20 degrees and gear down when I got a beautiful connection that was so good it could have been in the next room! I shouted up with my callsign and position...

"Atlanta Tower, good afternoon... Speedbird 9 Delta Victor, British Airways Boeing 747-400 heavy with information Alpha, requesting landing clearance..."

The response was almost as quick...

"Speedbird 9 Delta Victor, good day and welcome to Atlanta... cleared to land runway 09 left, surface wind is 130 at 5 knots... exit the runway to the left, please..."

Runway 09 Left! Good thing I had practiced! It was exactly 16:20 local time when the 747-400 finally touched down in Atlanta. Having parked at the Terminal, my final figures told part of the story... fuel in the tanks stood at just 9 percent! Total flight time had been 9 hours and 38 minutes including the three missed approaches and the holding pattern, south of the airport. It had been a really tough trip and I had worked my butt off – but, it had also been the best. The experience was one that will live in my memory for a long time. Speedbird turned left exiting the runway and I just about squeezed the Jumbo's wings between the poles of the marvellous Olympic banner. I found out about two days after the event, exactly where that excellent "landing" linkup had been to... Alaska! The Tower Controller was Brad Prendergast and he did a heck of a job! His controlled, methodical handling ensured that SpeedBird made it in unscathed.

To those that are contemplating an FSForum Flyin, I can only say **go for it!** You won't find anything else to compare with it. It is the most fun you can have without going anywhere and best of all... no jetlag. The next flyin destination will be London, the FSForum's first international destination!

About the Author - Lee is on the Staff of CompuServe's Flight Simulation Forum and is a keen Simulated Airline pilot. Lee's full time occupation is in the Aviation Security industry at London's Heathrow International Airport. He can be reached via email to 101500.66@compuserve.com. ***[MW✈]***

COMPUSERVE Your Electronic FBO

by Greg Hannigan

"I'm bored - what can we do between Fly-Ins?"

You've read a lot here in this column about FSFORUM Fly-Ins, our highly acclaimed online flying events. I've described the format, "reviewed" some of our past Fly-Ins, and tried to convey that "white knuckle" feeling of what it's like to land at an extremely busy airport while you're being "watched" by a tower operator.

I've also talked about the one aspect of a Fly-In event that we on the FSFORUM staff hear the most about from landing pilots - the online conference that's held in the forum during the event. We hear a lot about how much folks enjoyed hearing the descriptions of the landings of others, and how much fun it was for forum members to come together in pursuit of a common goal. The camaraderie and the social interaction with online flight-sim'ing friends are some of the things that really tend to be a big draw for the FSFORUM membership family.

But Fly-Ins come, usually, about twice a year. What should we do during those times between, when it sure would be nice to get everybody together for something? Well, about six months ago, the FSFORUM staff came up with an answer - the FSFORUM Flight Rally!

The FSFORUM Flight Rally is a monthly event usually held on the second Sunday of the month. Its purpose is to get us all together to do what FSFORUM members seem to enjoy so much - turn what is normally a solitary experience into a group venture, one where all can participate on their own and then come together and share the experience with others.

With an FSFORUM Flight Rally there are no "requirements" - no need to register, nothing special to download (though we do occasionally make available approach charts, scenery enhancements, and other little odds and ends), and no specific approaches to follow. There are no Dual Player calls to make, no regimen to follow, and perhaps best of all, you can use any flight simulation program that offers our destination as an available airport. You simply fly on your own to the announced destination, hopefully timing your landing to roughly 3pm EST, and then join us in FSFORUM's "Fly-Ins & Rallies" conference room and tell us about your flight! That really is all there is to it.

We thought that an appropriate destination for our first Flight Rally, held early last December, would be the place that we all saw the very first time any of us fired up Microsoft Flight Simulator - old wonderfully familiar Merrill C. Meigs Field in Chicago. Since that time we've been to San Jose, California, Westchester County Airport in the northern suburbs of New York City, and soon (as of this writing) to Orlando, Florida. We plan to have Flight Rallies to airports around the world, both large and small, that will not likely be eventual Fly-In destinations.

Feel the need to socialize with your flight sim'ing friends? Looking for a goal to share with them? Early results are showing us that the FSFORUM Flight Rally seems to be the answer!

About the author - Greg Hannigan is an Associate Sysop on CompuServe's FSFORUM and a long-time flight simulation fanatic. He can be reached via email at 105277.1330@compuserve.com - drop by the forum and say Hello!

by Simon Hradecky

There is a saying: "Nothing bad without good". And it proved true again, when some online events last year caused a large group of flight sim enthusiasts and developers to seek a new nest where they could share their interest in flight simulation.

This new nest, warm, welcoming, and open to everyone, was quickly found. A new forum, dedicated to simulations (actually simulation games, therefore the name SIMGAMES), was going to open. On the first day of SIMGAMES, the new forum got flooded with messages. Sysops had their hands full trying to prevent the new carpet and wallpapers from getting completely "decorated" by that high spirited, overcrowded party (that went on for several days).

Since then, the forum has established a very busy, high level discussion about all themes of flight simulation. We had robust discussions about the functionality of autopilots, we discussed the short comings of the several flight models found in today's sims, we built a complete scenery project (SIMGAMES resort), we covered handling techniques for aircraft in crosswinds, and much more. General user support is happily provided by most members of the forum.

The forum provides four major sections for civil aviation, three of them mainly devoted to Microsoft Flight Simulator (Section 6 named civil aviation, section 8 for scenery, and 9 for aircraft), and one almost exclusively dedicated to subLOGIC's ATP (section 7). In addition to these sections, SIMGAMES provides special sections for virtual airlines (section 10), SIMGAMES University (section 12), and of course, Online Flying in section 11.

In addition, SIMGAMES provides sections for simulations of automobiles, ships, combat planes - both historic and modern -, space ships, and sports. I'll go into more details about all the sections in the issues to come. However, I would like to first tell you about two exciting events that have been held through SIMGAMES – the Resort and Online Flying.

The Resort - Daniel Waskie brought up the idea of producing a common scenery, where a central administration just provides the very basic scenery, but "sells" space on this scenery, price being "irrigation" and development of that small space. Also the buyer had to provide a photograph of himself. This photograph was then put into the basic scenery onto the sold space by the organizers. After those formalities were over, the buyer started to develop his property, and a whole town was going to grow quickly. Many flight simmers "bought" a property and started to build their own dreams - many of them without ever

having tried to design scenery before. Somebody built a saloon (which was the most important task, of course), a hotel to follow shortly afterwards, and many, many fantastic looking villas started to rise as well. Don't forget the fish pond, that was created too. Not tiny town, but the first virtual town, that ever got developed! Of course, creating the project did not go without several conversations and minor problems. The project lead to quite some in depth discussions of how to do certain objects in scenery, how to achieve certain (colorizing) effects, how to scale objects (did you ever see a one-family house with 3 by 3 mile dimensions?), how to combine the single overlays that were created by the property owners, etc.. The project got finished after about half a year under the lead of Rafael Sanchez, not due to exhaustion of participants and property owners, but due to technical limitations FS5.1 imposed. If you want to download the SIMGAMES resort sceneries, you'll find it in library 8, file PCWORLD.ZIP.

Online Flying - SIMGAMES is also very proud of having been involved with Interstate 8 - a flight simulation competition, that was held Nov. 23rd and Nov. 24th in Germany with huge success. Seven teams from all over Europe, smallest team having 6 members, biggest having 24 members, came together in Krefeld, with breathtaking equipment like complete cockpit mock-ups. The task in an Interstate competition is to fly a given route during 24 hours of flying as accurate as possible, handle the aircraft as well as possible, and fly as quickly as possible on pre-announced parts of the route. Of course, Interstate organizers provide all sorts of difficulties to the participants. For example this time, flying 737's in FS5 and the upcoming MD-83 for ATP, a sudden decompression of the cabin occurred, requiring very good airmanship to get that airplane down in time to allow the virtual passengers to survive. The final leg not only confronted the crew (2 man crew minimum, some teams had 5 people in the cockpit) with an engine failure, but that failure also caused failures of the flaps. As if that would not be enough, shifting crosswinds at about 900 feet above the ground produced another unforeseen difficulty for the crews. The online conference on SIMGAMES that took place that Sunday after the race, was minted by breathless waiting for the news of Interstate, as a team coming together through SIMGAMES - the ATP team - was participating at Interstate as well, and had considered to be a favorite in that competition. The crowd in the conference room started to cheer, when the first news from Krefeld arrived. The SIMGAMES/ATP team had indeed won the competition.

So, there's always something going on in the forum. We are looking forward to meeting **you** in the virtual skies of SIMGAMES!

About the author - Simon Hradecky is a sysop in the SimGames forum, developer of ATP related utilities and products (including ATPUTILS and 3d-AGS), and president of Nomissoft. He can be reached via email at 100031.336@compuserve.com. [MW✈]

SNEAK PEEKS

SIERRA PRO PILOT UPDATE

Here are the latest screen shots of ProPilot - direct from their development team. The top-left is an aerial shot, high above the San Diego, California area, Miramar NAS is visible. The top-right is another aerial shot, but this time we are high above Miami, Florida. The lower-left is the panel from the KingAir-200. The lower-right is the latest panel for the Baron. Note that the panels are so detailed that they now even sport a Prop-Turning indicator (the little fan looking gizmo near the right side of the Baron panel and near center on the King panel. Pro Pilot is expected to release in July.

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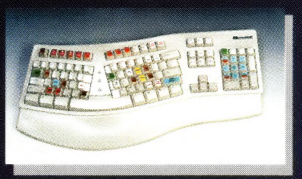

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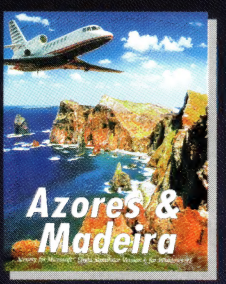

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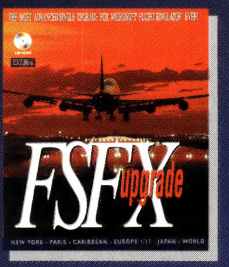

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